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Luther H. Hodges, Secretary
WEATHER BUREAU
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NATIONAL SEVERE STORMS PROJECT

REPORT No. 6

Index to the NSSP Surface Network

by

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FOREWORD

In 1951 the U. S. Weather Bureau established a special network of surface weather stations in the South Central States for the purpose of obtaining detailed measurements required to study squall lines and other severe weather phenomena. The bulk of the present NSSP "Alpha Network" is composed of stations in this original "Tornado Project" Network. In addition, a smaller but more concentrated "Beta Network" has been installed, to study the surface characteristics of thunderstorms in greater detail. The instruments are serviced by cooperative observers, mainly during the spring months, and their valuable assistance is gratefully acknowledged.

In spring 1961, the Weather Bureau and several cooperating agencies initiated a large-scale effort to investigate the giant thunderstorms, tornadoes, and other phenomena characteristic of the Great Plains States. Data from the surface networks now serve, along with information gathered by use of reconnaissance aircraft, radar, upper-air sounding stations and other facilities, as tools for studying the complete three-dimensional structure of the thunderstorm. The descriptions thus obtained will be of value in devising improved methods of forecasting hazardous weather phenomena, in providing needed information for aircraft stress designing, and for other purposes. The over-all objectives and facilities of the Project are outlined in NSSP Report Number 1.

The Alpha Network stations are all equipped with recording barographs, virtually all with hygrothermographs, and the majority with recording rain gages. Barographs and hygrothermographs are set for one revolution per 12 hours, and charts are changed once daily. Rain gage charts extend for 24 hours per revolution on the recording drum, and charts are changed generally every two to three days. In addition to the above instruments, the 36 Beta Network stations are equipped with instruments recording wind direction and speed.

Locations of Alpha Network stations are considered accurate within one minute of latitude and longitude, and thus to within one-half to one mile, as determined from Rand-McNally maps and World Aeronautical Charts (sectional). Locations of Beta Network stations were determined personally by Dr. Fujita, using automobile mileages from accurately-known road locations, and are specified to a finer degree.

The listed heights are obtained from various sources, and few of them were determined by accurate surveys. In some cases, they may be off by 50 to 150 feet. In the case of the Beta Network stations, heights were generally determined from detailed contour maps of the U. S. Geological Survey; however uncertainties in exact locations in rolling terrain make the exact heights uncertain. Since the barographs are not set against a standard barometer, the pressures indicated by them cannot be used directly for reduction to sea-level pressures, and the exact heights of the stations are relatively unimportant. Hygrothermographs are likewise not set against standard instruments, and empirical corrections are required in using the data in mapped form.

For convenience in using the data, all stations have been provided with number or letter-number identifiers. In 1962, all forms will be pre-stamped with these, although this was not done in 1961.

The original charts are on file at NSSP Headquarters in Kansas City. They have been microfilmed, and copies are available at cost. It should be noted that many rain gage stations listed in the NSSP Network (marked by asterisks in Table 2) are primarily operated for the Hydrologic Services Division of the Weather Bureau. Several of these stations are operated in cooperation with the U. S. Corps of Engineers. The original traces for these stations are on file in the National Weather Records Center, Asheville, North Carolina. Precipitation amounts for these are published in "Hourly Precipitation Data", which may be purchased from Superintendent of Documents, Government Printing Office, Washington 25, D. C.

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INDEX TO THE NSSP SURFACE NETWORK

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I. INDEX TO THE ALPHA NETWORK STATIONS

During the 1961 operation there were about 200 stations in the National Severe Storms Project α network. This number is subject to increase in coming years. The network area covered the southern half of Kansas, the entire state of Oklahoma, and the northern three-quarters of Texas.

C. F. Van Thullenar, NSSP Director, C. W. Newton, NSSP Chief Scientist, and the author discussed methods of identifying the network stations, reaching the conclusion that all stations are to be numbered in the following manner.

(a) The entire area of the network--taking into consideration future expansion--was divided into sections A through Y (fig. 1), bounded by the latitudes 27°, 30°, 33°, 36°, 39°, and 42° N. and the longitudes 90°, 93°, 96°, 99°, 102°, and 105° W. In 1961 there were no stations in sections A through E, F, J, O, T, and U through Y. Future expansion of the network may be in these sections.

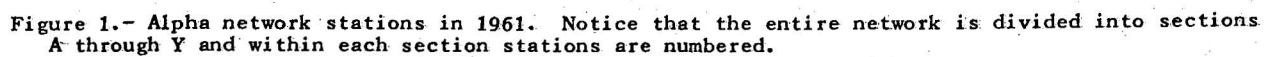
(b) Within each section, all α network stations were numbered from upper left to right, then downward toward the bottom. The largest number of stations within a particular section does not exceed 34 at the present time. The stations are thus designated A-3, K-23, ...etc.

(c) If stations are moved from one location to another or new stations are added, new numbers will be assigned to avoid possible confusion.

Figure 1 represents the distribution of α network stations together with the regular Weather Bureau stations, which are indicated by open circles. Stations are distributed over a comparatively flat plain with an elevation increasing westward from approximately sea level to 4000 ft. Height-contour lines at 1000-ft. intervals appear in figure 2, where α stations appear as dots, and β stations (numbered only on the periphery) as crosses.

The α network stations are indexed in alphabetical order in Table 1, and according to station numbers in Table 2, where location, elevation, and instrumentation are indicated.

¹Preparation of this report was supported under Contract Cwb 9931.



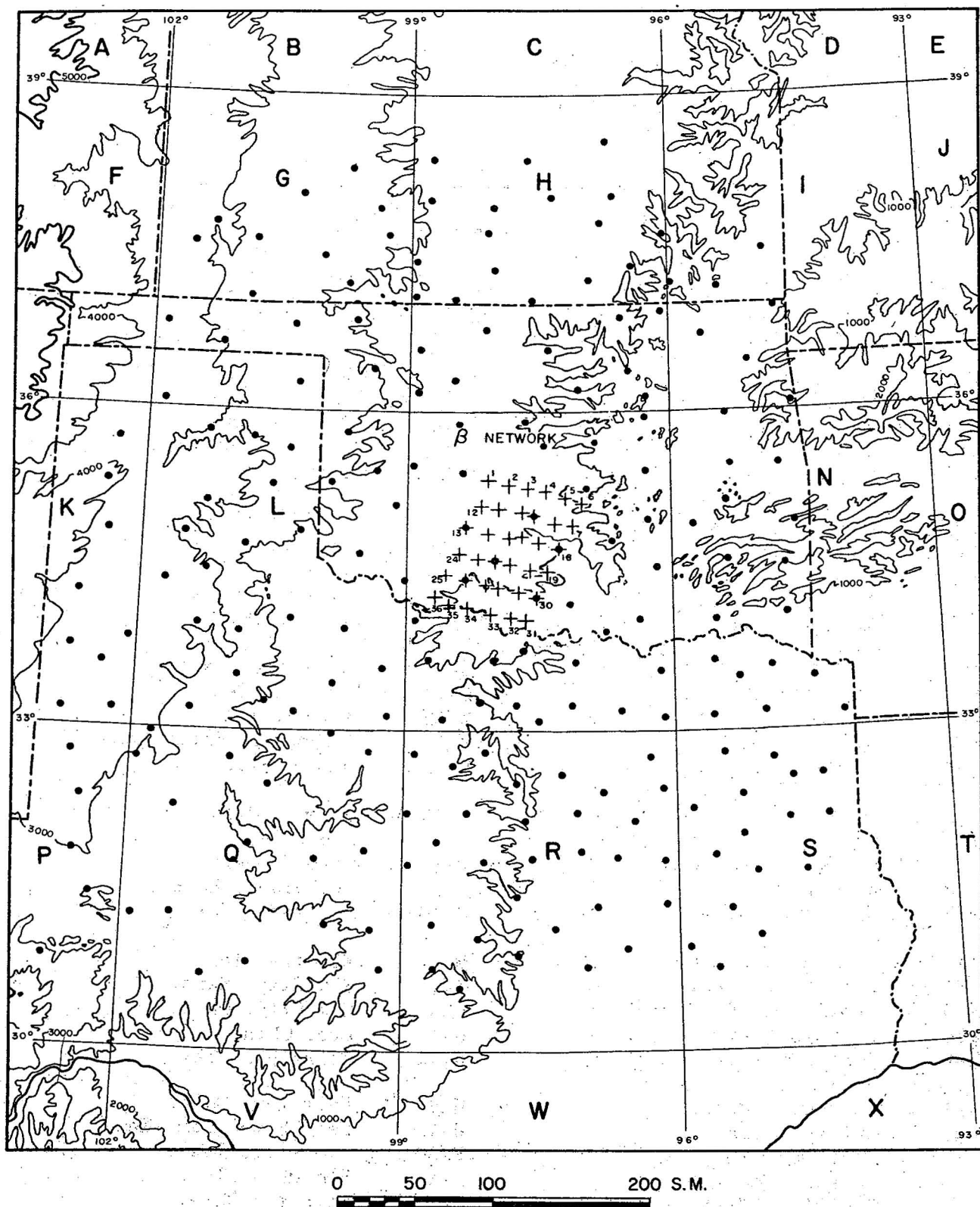


Figure 2.- Alpha network stations with 1000-ft. interval contour lines. Beta stations are shown by crosses. Figures 3 and 4 show Beta Network on larger scale.

TABLE I.- ALPHA NETWORK STATIONS

(Alphabetical)

| No. | Station | No. | Station |
|-------|--------------------|------|------------------------|
| M-18 | Ada, Okla. | K-2 | Channing, Tex. |
| H-8 | Aetna, Kans. | R-2 | Cisco, Tex. |
| Q-7 | Albany, Tex. | L-2 | Claude, Tex. |
| S-12 | Alto, Tex. | N-6 | Clayton, Okla. |
| P-2 | Andrews, Tex. | H-25 | Cleveland, Okla. |
| N-15 | Annona, Tex. | R-20 | Clifton, Tex. |
| K-9 | Anton, Tex. | M-1 | Clinton, Okla. |
| *M-12 | Apache, Okla. | M-21 | Coalgate, Okla. |
| M-17 | Ardmore, Okla. | Q-13 | Coleman, Tex. |
| G-8 | Ashland, Kans. | R-16 | Comanche, Tex. |
| L-23 | Aspermont, Tex. | R-24 | Coolidge, Tex. |
| S-1 | Athens, Tex. | R-11 | Corsicana, Tex. |
| N-17 | Atlanta, Tex. | P-4 | Crane, Tex. |
| Q-11 | Ballinger, Tex. | M-4 | Crescent, Okla. |
| G-2 | Bazine, Kans. | *M-6 | Criner, Okla. |
| M-25 | Bellevue, Tex. | S-10 | Crockett, Tex. |
| Q-9 | Big Lake, Tex. | L-25 | Crowell, Tex. |
| Q-3 | Big Spring, Tex. | M-30 | Denton, Tex. |
| H-22 | Billings, Okla. | H-5 | Diamond Springs, Kans. |
| M-33 | Bonham, Tex. | L-16 | Duke, Okla. |
| M-28 | Boyd, Tex. | M-19 | Durant, Okla. |
| Q-14 | Brady, Tex. | Q-12 | Eden, Tex. |
| R-1 | Breckenridge, Tex. | M-5 | Edmond, Okla. |
| L-13 | Brice, Tex. | H-15 | El Dorado, Kans. |
| M-27 | Bridgeport, Tex. | Q-15 | Eldorado, Tex. |
| N-10 | Broken Bow, Okla. | M-11 | Electra, Tex. |
| K-8 | Brownfield, Tex. | I-1 | Elk City, Kans. |
| R-14 | Brownwood, Tex. | L-8 | Elk City, Okla. |
| G-16 | Buffalo, Okla. | G-12 | Eva, Okla. |
| R-8 | Burleson, Tex. | R-25 | Fairfield, Tex. |
| H-13 | Caldwell, Kans. | H-20 | Fairview, Okla. |
| M-20 | Calvin, Okla. | H-17 | Fall River Dam, Kans. |
| S-7 | Carthage, Tex. | R-30 | Florence, Tex. |
| H-6 | Cassody, Kans. | L-18 | Floydada, Tex. |
| M-8 | Chandler, Okla. | H-24 | Foraker, Okla. |

*Stations in both α and β networks

TABLE I (CONTINUED)

| No. | Station | No. | Station |
|------|------------------------------|-------|----------------------|
| P-5 | Ft. Stockton, Tex. | R-13 | Kemp, Tex. |
| L-17 | Frederick, Okla. | H-27 | Keystone Dam, Okla. |
| L-5 | Gageby, Tex. | H-11 | Kingman, Kans. |
| M-29 | Gainesville, Tex. | G-9 | Kinsley, Kans. |
| R-19 | Gatesville, Tex. | H-9 | Kiowa, Kans. |
| S-4 | Gilmer, Tex. | L-24 | Knox City, Tex. |
| I-3 | Girard, Kans. | L-10 | Kress, Tex. |
| M-23 | Graham, Tex. | M-22 | Lake Kickapoo, Tex. |
| R-6 | Granbury, Tex. | G-4 | Lakin, Kans. |
| I-5 | Grand River Dam, Okla. | Q-1 | Lamesa, Tex. |
| H-1 | Great Bend, Kans. | R-17 | Lampasas, Tex. |
| H-21 | Great Salt Plains Dam, Okla. | K-7 | Levelland, Tex. |
| G-10 | Greensburg, Kans. | G-6 | Liberal, Kans. |
| M-34 | Greenville, Tex. | G-15 | Lipscomb, Tex. |
| H-16 | Grenola, Kans. | R-28 | Llano, Tex. |
| S-13 | Groveton, Tex. | S-6 | Longview, Tex. |
| R-18 | Hamilton, Tex. | M-3 | Lookeba, Okla. |
| G-13 | Hardesty, Okla. | N-5 | McAlester, Okla. |
| H-12 | Harper, Kans. | M-32 | McKinney, Tex. |
| R-32 | Hearne, Tex. | L-4 | McLean, Tex. |
| N-8 | Heavener Exp. Farm, Okla. | H-3 | McPherson, Kans. |
| S-5 | Henderson, Tex. | S-16 | Madisonville, Tex. |
| K-4 | Hereford, Tex. | R-29 | Marble Falls, Tex. |
| L-9 | Hobart, Okla. | R-23 | Marlin, Tex. |
| N-7 | Hugo, Okla. | *M-14 | Marlow, Okla. |
| H-26 | Hulah Dam, Okla. | S-8 | Marshall, Tex. |
| S-17 | Huntsville, Tex. | Q-18 | Mason, Tex. |
| H-10 | Hutchinson Exp. Fld., Kans. | L-6 | Mayfield, Okla. |
| R-9 | Itasca, Tex. | L-3 | Miami, Tex. |
| M-24 | Jacksboro, Tex. | R-5 | Mineral Wells, Tex. |
| S-11 | Jacksonville, Tex. | G-7 | Minneola, Kans. |
| L-22 | Jayton, Tex. | K-6 | Morton, Tex. |
| R-26 | Jewett, Tex. | I-2 | Mound Valley, Kans. |
| G-3 | Johnson, Kans. | N-14 | Mount Pleasant, Tex. |
| G-1 | Kalvesta, Kans. | K-3 | Muleshoe, Tex. |

*Stations in both α and β networks

TABLE I (CONTINUED)

| No. | Station | No. | Station |
|-------|-----------------------|-------|-----------------------|
| S-14 | Nacogdoches, Tex. | L-12 | Silverton, Tex. |
| N-16 | New Boston, Tex. | Q-4 | Snyder, Tex. |
| H-4 | Newton, Kans. | L-21 | Spur, Tex. |
| M-26 | Nocona, Tex. | Q-6 | Stamford, Tex. |
| I-4 | Nowata, Okla. | R-4 | Stephenville, Tex. |
| N-9 | Octavia, Okla. | H-23 | Stillwater, Okla. |
| Q-2 | O'Donnell, Tex. | R-3 | Strawn, Tex. |
| M-10 | Okemah, Okla. | G-5 | Sublette, Kans. |
| Q-16 | Ozona, Tex. | N-12 | Sulphur Springs, Tex. |
| L-15 | Paducah, Tex. | H-7 | Sun City, Kans. |
| S-9 | Palestine, Tex. | G-11 | Sunray, Tex. |
| N-11 | Paris, Tex. | Q-5 | Sweetwater, Tex. |
| *M-16 | Pauls Valley, Okla. | M-7 | Tecumseh, Okla. |
| P-3 | Penwell, Tex. | R-22 | Temple, Tex. |
| L-1 | Phillips, Tex. | R-12 | Terrell, Tex. |
| K-5 | Plains, Tex. | L-27 | Throckmorton, Tex. |
| L-19 | Post, Tex. | S-3 | Tyler, Tex. |
| I-6 | Quapaw, Okla. | K-1 | Vega, Tex. |
| N-3 | Quinton, Okla. | N-1 | Wagoner, Okla. |
| S-2 | Quitman, Tex. | R-7 | Walnut Springs, Tex. |
| Q-8 | Rankin, Tex. | *M-13 | Walters Lake, Okla. |
| G-14 | Riverside, Okla. | N-2 | Warner, Okla. |
| L-20 | Roaring Springs, Tex. | M-2 | Watonga, Okla. |
| Q-10 | Robert Lee, Tex. | R-10 | Waxahachie, Tex. |
| R-31 | Rockdale, Tex. | H-19 | Waynoka, Okla. |
| L-7 | Roll, Okla. | L-11 | Wayside, Tex. |
| N-13 | Rugby, Tex. | L-14 | Wellington, Tex. |
| H-2 | St. John, Kans. | R-21 | West, Tex. |
| N-4 | Sallisaw, Okla. | I-7 | Westville, Okla. |
| R-15 | San Saba, Tex. | M-31 | Willis, Okla. |
| H-18 | Seiling, Okla. | H-14 | Winfield, Kans. |
| P-1 | Seminole, Tex. | *M-15 | Wirt, Okla. |
| L-26 | Seymour, Tex. | G-17 | Woodward, Okla. |

*Stations in both α and β networks

TABLE 2.- ALPHA NETWORK STATIONS

(In numerical order)

| No. | Station | Designator | Latitude (° ') | | Longitude (° ') | | Elevation (ft.) | Instrument MB, HT, *RG | | |
|-----|-----------------------------------|------------|-------------------|----|--------------------|-----|--------------------|---------------------------|-------|--|
| G | 1 Kalvesta, Kans. | KAL | 38 | 02 | 100 | 17 | 2670 | MB, | | |
| | 2 Bazine, Kans. | BAZ | 38 | 16 | 99 | 45 | 2160 | MB, HT, | *RG | |
| | 3 Johnson, Kans. | JON | 37 | 32 | 101 | 34 | 3172 | MB, HT | | |
| | 4 Lakin, Kans. | LKN | 37 | 46 | 101 | 25 | 3080 | MB | | |
| | 5 Sublette, Kans. | SUB | 37 | 29 | 100 | 50 | 2911 | MB, HT, | *RG | |
| | 6 Liberal, Kans. | LIB | 37 | 02 | 100 | 55 | 2838 | MB, HT, | RG | |
| | 7 Minneola, Kans. | MNO | 37 | 27 | 100 | 01 | 2558 | MB, HT | | |
| | 8 Ashland, Kans. | ASH | 37 | 12 | 99 | 46 | 1765 | MB, HT, | RG | |
| | 9 Kinsley, Kans. | KIN | 37 | 56 | 99 | 24 | 2170 | MB, HT, | RG | |
| | 10 Greensburg, Kans. | GNB | 37 | 37 | 99 | 18 | 2235 | MB, HT | | |
| | 11 Sunray, Tex. | SRY | 36 | 01 | 101 | 49 | 3540 | MB | | |
| | | | (35 | 58 | 101 | 52) | | | (*RG) | |
| | 12 Eva, Okla. | EVA | 36 | 48 | 101 | 54 | 3574 | MB, HT, | *RG | |
| | 13 Hardesty, Okla. | HAR | 36 | 37 | 101 | 12 | 2900 | MB, HT | | |
| | 14 Riverside, Okla. | RIV | 36 | 48 | 100 | 21 | 2500 | MB, HT, | *RG | |
| | 15 Lipscomb, Tex. | LPS | 36 | 14 | 100 | 17 | 2430 | MB, HT, | *RG | |
| | 16 Buffalo, Okla. | BUF | 36 | 50 | 99 | 38 | 1800 | MB, HT | | |
| | 17 Woodward, Okla. | WDW | 36 | 25 | 99 | 24 | 1908 | MB, HT, | *RG | |
| H | 1 Great Bend, Kans. | GRB | 38 | 24 | 98 | 46 | 1940 | MB, HT, | RG | |
| | 2 St. John, Kans. | SJN | 38 | 00 | 98 | 46 | 1900 | MB, HT | | |
| | 3 McPherson, Kans. | MCP | 38 | 20 | 97 | 40 | 1495 | MB, HT, | RG | |
| | 4 Newton, Kans. | NTN | 38 | 02 | 97 | 23 | 1447 | MB, HT, | RG | |
| | 5 Diamond Springs, Kans. | DIA | 38 | 33 | 96 | 45 | 1350 | MB, HT, | *RG | |
| | 6 Cassoday, Kans. | CAS | 38 | 02 | 96 | 39 | 1465 | MB, HT, | *RG | |
| | 7 Sun City, Kans. | SUN | 37 | 23 | 98 | 55 | 1677 | MB, HT, | *RG | |
| | 8 Aetna, Kans. | AET | 37 | 04 | 98 | 58 | 1570 | MB, HT | | |
| | 9 Kiowa, Kans. | KIO | 37 | 01 | 98 | 29 | 1333 | MB, HT | | |
| | 10 Hutchinson Exp. Fld., Kans. | HUX | 37 | 56 | 98 | 02 | 1570 | MB, HT, | *RG | |

*RG belonging to Hydrologic Services

**Station also part of β network

***No observer, 1961

MB: Microbarograph

HT: Hygrothermograph

RG: Recording rain gage

TABLE 2 (CONTINUED)- ALPHA NETWORK STATIONS

| No. | Station | Designator | Latitude (° ') | | Longitude (° ') | | Elevation (ft.) | Instrument MB, HT, *RG | | |
|-----|------------------------------------|------------|-------------------|----|--------------------|----|--------------------|---------------------------|--|--|
| H | 11 Kingman, Kans. | KGM | 37 | 39 | 98 | 07 | 1504 | MB, HT | | |
| | 12 Harper, Kans. | HRP | 37 | 17 | 98 | 02 | 1430 | MB, HT, RG | | |
| | 13 Caldwell, Kans. | CAD | 37 | 02 | 97 | 36 | 1164 | MB, HT, *RG | | |
| | 14 Winfield, Kans. | WIN | 37 | 15 | 96 | 58 | 1185 | MB, HT | | |
| | 15 El Dorado, Kans. | EDK | 37 | 49 | 96 | 50 | 1282 | MB, HT | | |
| | 16 Grenola, Kans. | GRE | 37 | 22 | 96 | 27 | 1160 | MB, HT, *RG | | |
| | 17 Fall River Dam, Kans. | FRV | 37 | 39 | 96 | 05 | 1020 | MB, HT, *RG | | |
| | 18 Seiling, Okla. | SEI | 36 | 09 | 98 | 55 | 1760 | MB, HT, *RG | | |
| | 19 Waynoka, Okla. | WYN | 36 | 35 | 98 | 52 | 1510 | MB, HT, *RG | | |
| | 20 Fairview, Okla. | FAV | 36 | 16 | 98 | 29 | 1300 | MB, HT | | |
| | 21 Great Salt Plains Dam, Okla. | GSP | 36 | 45 | 98 | 08 | 1195 | MB, HT, *RG | | |
| | 22 Billings, Okla. | BIL | 36 | 32 | 97 | 27 | 1000 | MB, HT, RG | | |
| | 23 Stillwater, Okla. | STI | 36 | 07 | 97 | 05 | 900 | MB, HT, *RG | | |
| | 24 Foraker, Okla. | FOR | 36 | 52 | 96 | 34 | 1270 | MB, HT | | |
| | 25 Cleveland, Okla. | CLV | 36 | 19 | 96 | 28 | 800 | MB, HT, *RG | | |
| | 26 Hulah Dam, Okla. | HUD | 36 | 55 | 96 | 06 | 744 | MB, HT, *RG | | |
| | 27 Keystone Dam, Okla. | KEY | 36 | 09 | 96 | 15 | 700 | MB, HT, *RG | | |
| I | 1 Elk City, Kans. | ECK | 37 | 13 | 95 | 59 | 900 | MB, HT | | |
| | 2 Mound Valley, Kans. | MDV | 37 | 11 | 95 | 27 | 800 | MB, HT, *RG | | |
| | 3 Girard, Kans. | GIR | 37 | 31 | 94 | 50 | 985 | MB, HT, RG | | |
| | 4 Nowata, Okla. | NOW | 36 | 42 | 95 | 38 | 705 | MB, HT, *RG | | |
| | 5 Grand River Dam, Okla. | GRD | 36 | 28 | 95 | 03 | 766 | MB, HT, *RG | | |
| | 6 Quapaw, Okla. | QUA | 36 | 58 | 94 | 47 | 850 | MB, HT, *RG | | |
| | 7 Westville, Okla. | WSV | 36 | 04 | 94 | 35 | 1000 | MB, HT, RG | | |
| K | 1 Vega, Tex. | VGA | 35 | 15 | 102 | 26 | 4000 | MB | | |
| | 2 Channing, Tex. | CHN | 35 | 41 | 102 | 20 | 3820 | MB, HT, *RG | | |
| | 3 Muleshoe, Tex. | MUL | 34 | 13 | 102 | 43 | 3790 | MB | | |
| | 4 Hereford, Tex. | HER | 34 | 49 | 102 | 24 | 3806 | MB, HT, *RG | | |
| | 5 Plains, Tex. | PLN | 33 | 11 | 102 | 49 | 3690 | MB | | |

*RG belonging to Hydrologic Services

**Station also part of β network

***No observer, 1961

TABLE 2 (CONTINUED)- ALPHA NETWORK STATIONS

| No. | Station | Designator | Latitude (° ') | | Longitude (° ') | | Elevation (ft.) | Instrument MB, HT, *RG | | |
|-----|--------------------------|------------|-------------------|----|--------------------|----|--------------------|---------------------------|--|--|
| K | 6 Morton, Tex. | MOR | 33 | 44 | 102 | 46 | 3770 | MB | | |
| | 7 Levelland, Tex. | LVL | 33 | 34 | 102 | 23 | 3552 | MB | | |
| | 8 Brownfield, Tex. | BFD | 33 | 11 | 102 | 15 | 3370 | MB | | |
| | 9 Anton, Tex. | ANT | 33 | 49 | 102 | 09 | 3380 | MB | | |
| L | 1 Phillips, Tex. | PHI | 35 | 46 | 101 | 20 | 2780 | MB, HT | | |
| | 2 Claude, Tex. | CLD | 35 | 07 | 101 | 22 | 3397 | MB, HT | | |
| | 3 Miami, Tex. | MIA | 35 | 42 | 100 | 48 | 2744 | MB, HT | | |
| | 4 McLean, Tex. | MCL | 35 | 14 | 100 | 36 | 2860 | MB, HT, *RG | | |
| | 5 Gageby, Tex. | GBY | 35 | 37 | 100 | 22 | 2670 | MB, HT, *RG | | |
| | 6 Mayfield, Okla. | MAY | 35 | 18 | 99 | 52 | 1920 | MB, HT, *RG | | |
| | 7 Roll, Okla. | ROL | 35 | 47 | 99 | 43 | 2290 | MB, HT, *RG | | |
| | 8 Elk City, Okla. | ECO | 35 | 25 | 99 | 25 | 1980 | MB, HT, *RG | | |
| | 9 Hobart, Okla. | HBT | 35 | 01 | 99 | 06 | 1565 | MB, HT, *RG | | |
| | 10 Kress, Tex. | KRS | 34 | 22 | 101 | 45 | 3477 | MB, HT, *RG | | |
| | 11 Wayside, Tex. | WAY | 34 | 48 | 101 | 33 | 3310 | MB, HT, *RG | | |
| | 12 Silverton, Tex. | SLV | 34 | 28 | 101 | 17 | 3485 | MB, HT | | |
| | 13 Brice, Tex. | BRC | 34 | 42 | 100 | 53 | 2240 | MB, HT | | |
| | 14 Wellington, Tex. | WEL | 34 | 51 | 100 | 12 | 2030 | MB, HT, *RG | | |
| | 15 Paducah, Tex. | PAD | 34 | 01 | 100 | 18 | 1886 | MB, HT, RG | | |
| | 16 Duke, Okla. | DUK | 34 | 40 | 99 | 34 | 1420 | MB, HT, RG | | |
| | 17 Frederick, Okla. | FRE | 34 | 24 | 99 | 01 | 1300 | MB, HT, RG | | |
| | 18 Floydada, Tex. | FLY | 33 | 58 | 101 | 21 | 3184 | MB, HT | | |
| | 19 Post, Tex. | POS | 33 | 12 | 101 | 22 | 2680 | MB | | |
| | 20 Roaring Springs, Tex. | ROA | 33 | 54 | 100 | 51 | 2550 | MB, HT | | |
| | 21 Spur, Tex. | SPU | 33 | 29 | 100 | 52 | 2274 | MB, *RG | | |
| | 22 Jayton, Tex. | JAY | 33 | 15 | 100 | 34 | 2010 | MB, *RG | | |
| | 23 Aspermont, Tex. | ASP | 33 | 09 | 100 | 13 | 1765 | MB, HT, RG | | |
| | 24 Knox City, Tex. | KNO | 33 | 25 | 99 | 49 | 1570 | MB, HT, RG | | |
| | 25 Crowell, Tex. | CRW | 33 | 59 | 99 | 42 | 1470 | MB, HT, RG | | |
| | 26 Seymour, Tex. | SEY | 33 | 35 | 99 | 16 | 1291 | MB, HT, RG | | |
| | 27 Throckmorton, Tex. | THR | 33 | 11 | 99 | 11 | 1400 | MB, HT, RG | | |

*RG belonging to Hydrologic Services

**Station also part of β network

***No observer, 1961

TABLE 2 (CONTINUED)- ALPHA-NETWORK STATIONS

| No. | Station | Designator | Latitude (° ') | | Longitude (° ') | | Elevation (ft.) | Instrument MB, HT, *RG | | |
|-------|---------------------|------------|-------------------|----|--------------------|----|---------------------|---------------------------|--|--|
| M 1 | Clinton, Okla. | CLN | 35 | 29 | 98 | 59 | 1570 | MB, HT, RG | | |
| 2 | Watonga, Okla. | WTG | 35 | 51 | 98 | 25 | 1506 | MB, HT, RG | | |
| 3 | Lookeba, Okla. | LOO | 35 | 23 | 98 | 22 | 1355 | MB, HT, RG | | |
| 4 | Crescent, Okla. | CRE | 35 | 55 | 97 | 41 | 1030 | MB, HT, RG | | |
| 5 | Edmond, Okla. | EDM | 35 | 39 | 97 | 29 | 1200 | MB, HT, RG | | |
| **6 | Criner, Okla. | CNR | 35 | 01 | 97 | 34 | 1240 | MB, HT, RG, W | | |
| 7 | Tecumseh, Okla. | TEC | 35 | 16 | 96 | 56 | 1100 | MB, HT, RG | | |
| 8 | Chandler, Okla. | CHA | 35 | 42 | 96 | 53 | 975 | MB, HT | | |
| 10 | Okemah, Okla. | OKE | 35 | 26 | 96 | 18 | 935 | MB, HT, *RG | | |
| 11 | Electra, Tex. | ELE | 34 | 02 | 98 | 55 | 1222 | MB, HT, RG | | |
| **12 | Apache, Okla. | APA | 34 | 53 | 98 | 18 | 1410 | MB, HT, RG, W | | |
| **13 | Walters Lake, Okla. | WLT | 34 | 24 | 98 | 21 | 1030 | MB, HT, RG, W | | |
| **14 | Marlow, Okla. | MLW | 34 | 36 | 98 | 01 | 1150 | MB, HT, RG, W | | |
| **15 | Wirt, Okla. | WIR | 34 | 15 | 97 | 31 | 950 | MB, HT, RG, W | | |
| **16 | Pauls Valley, Okla. | PAV | 34 | 42 | 97 | 16 | 1030 | MB, HT, RG, W | | |
| 17 | Ardmore, Okla. | ARD | 34 | 10 | 97 | 08 | 872 | MB, HT, RG | | |
| 18 | Ada, Okla. | ADA | 34 | 47 | 96 | 41 | 1001 | MB, HT, RG | | |
| 19 | Durant, Okla. | DUR | 34 | 01 | 96 | 23 | 685 | MB, HT, RG | | |
| 20 | Calvin, Okla. | CAL | 34 | 58 | 96 | 15 | 713 | MB, HT, RG | | |
| 21 | Coalgate, Okla. | COA | 34 | 32 | 96 | 13 | 616 | MB, HT, RG | | |
| 22 | Lake Kickapoo, Tex. | LAK | 33 | 40 | 98 | 47 | 1045 | MB, HT, RG | | |
| 23 | Graham, Tex. | GRH | 33 | 05 | 98 | 35 | 1100 | MB, HT, RG | | |
| 24 | Jacksboro, Tex. | JAB | 33 | 14 | 98 | 10 | 1098 | MB, HT, RG | | |
| 25 | Bellevue, Tex. | BEL | 33 | 37 | 98 | 02 | 1040 | MB, HT, RG | | |
| | | | (33 | 38 | 98 | 01 | after May 8, 1961.) | | | |
| 26 | Nocona, Tex. | NOC | 33 | 47 | 97 | 44 | 980 | MB, HT, RG | | |
| 27 | Bridgeport, Tex. | BRI | 33 | 12 | 97 | 46 | 754 | MB, HT, RG | | |
| 28 | Boyd, Tex. | BOY | 33 | 04 | 97 | 31 | 731 | MB, HT, RG | | |
| ***29 | Gainesville, Tex. | GAS | 33 | 38 | 97 | 08 | 745 | MB, HT, *RG | | |
| 30 | Denton, Tex. | DNT | 33 | 15 | 97 | 11 | 750 | MB, HT, *RG | | |
| 31 | Willis, Okla. | WIL | 33 | 53 | 96 | 48 | 659 | MB, HT, RG | | |
| 32 | McKinney, Tex. | MKI | 33 | 12 | 96 | 37 | 612 | MB, HT, RG | | |
| 33 | Bonham, Tex. | BON | 33 | 32 | 96 | 08 | 566 | MB, HT, RG | | |
| 34 | Greenville, Tex. | GRV | 33 | 07 | 96 | 08 | 550 | MB, HT, RG | | |

*RG belonging to Hydrologic Services

**Station also part of β network

***No observer, 1961

TABLE 2 (CONTINUED)- ALPHA NETWORK STATIONS

| No. | Station | Designator | Latitude (° ') | | Longitude (° ') | | Elevation (ft.) | Instrument MB, HT, *RG |
|-----|-------------------------------|------------|-------------------|----|--------------------|----|----------------------|---------------------------|
| N | 1 Wagoner, Okla. | WAG | 35 | 58 | 95 | 22 | 590 | MB, HT, RG |
| | 2 Warner, Okla. | WAR | 35 | 29 | 95 | 19 | 580 | MB, HT, RG |
| | 3 Quinton, Okla. | QUI | 35 | 08 | 95 | 22 | 654 | MB, HT, RG |
| | 4 Sallisaw, Okla. | SAL | 35 | 28 | 94 | 47 | 531 | MB, HT |
| | 5 McAlester, Okla. | MCA | 34 | 57 | 95 | 50 | 760 | MB, HT, RG |
| | 6 Clayton, Okla. | CLA | 34 | 35 | 95 | 21 | 602 | MB, HT, RG |
| | 7 Hugo, Okla. | HUG | 34 | 01 | 95 | 31 | 540 | MB, HT, *RG |
| | 8 Heavener Exp. Farm Okla. | HVX | 34 | 55 | 94 | 36 | 556 | MB, HT, *RG |
| | 9 Octavia, Okla. | OCT | 34 | 31 | 94 | 44 | 850 | MB, HT |
| | 10 Broken Bow, Okla. | BKN | 34 | 03 | 94 | 44 | 475 | MB, HT |
| | 11 Paris, Tex. | PAR | 33 | 40 | 95 | 34 | 542 | MB, HT, RG |
| | 12 Sulphur Springs, Tex. | SUL | 33 | 08 | 95 | 36 | 495 | MB, HT, *RG |
| | 13 Rugby, Tex. | RUG | 33 | 29 | 95 | 15 | 400 | MB, HT, RG |
| | 14 Mount Pleasant, Tex. | MTP | 33 | 10 | 95 | 00 | 416 | MB, HT, *RG |
| | 15 Annona, Tex. | ANN | 33 | 35 | 94 | 55 | 400 | MB, HT, RG |
| | 16 New Boston, Tex. | NBS | 33 | 28 | 94 | 25 | 350 | MB |
| | 17 Atlanta, Tex. | ATL | 33 | 08 | 94 | 09 | 265 | MB, RG |
| P | 1 Seminole, Tex. | SEM | 32 | 43 | 102 | 39 | 3318 | MB |
| | 2 Andrews, Tex. | AND | 32 | 19 | 102 | 33 | 3200 | MB |
| | 3 Penwell, Tex. | PEN | 31 | 44 | 102 | 36 | 2940 | MB |
| | 4 Crane, Tex. | CRN | 31 | 24 | 102 | 20 | 2600 | MB, *RG |
| | 5 Ft. Stockton, Tex. | FTS | 30 | 54 | 102 | 52 | 3100 | MB, *RG |
| | | | (30 | 52 | 102 | 55 | after May 19, 1961.) | |
| Q | 1 Lamesa, Tex. | LMS | 32 | 42 | 101 | 56 | 2965 | MB |
| | 2 O'Donnell, Tex. | ODO | 32 | 58 | 101 | 49 | 3046 | MB, *RG |
| | 3 Big Spring, Tex. | BIG | 32 | 15 | 101 | 27 | 2528 | MB, *RG |
| | 4 Snyder, Tex. | SND | 32 | 43 | 100 | 55 | 2330 | MB |
| | 5 Sweetwater, Tex. | SWE | 32 | 28 | 100 | 28 | 2380 | MB, HT, RG |

*RG belong to Hydrologic Services

**Station also part of β network

***No observer, 1961

TABLE 2 (CONTINUED)- ALPHA NETWORK STATIONS

| No. | Station | Designator | Latitude (° ') | | Longitude (° ') | | Elevation (ft.) | Instrument MB, HT, *RG |
|------|----------------------|------------|-------------------|----|--------------------|----|--------------------|---------------------------|
| Q 6 | Stamford, Tex. | STA | 32 | 57 | 99 | 48 | 1614 | MB, HT, *RG |
| 7 | Albany, Tex. | ALB | 32 | 44 | 99 | 18 | 1800 | MB, HT, RG |
| 8 | Rankin, Tex. | RAN | 31 | 13 | 101 | 56 | 2595 | MB |
| ***9 | Big Lake, Tex. | BGL | 31 | 12 | 101 | 27 | 2680 | MB |
| 10 | Robert Lee, Tex. | ROB | 31 | 54 | 100 | 41 | 1775 | MB |
| 11 | Ballinger, Tex. | BAL | 31 | 46 | 99 | 57 | 1637 | MB, HT, RG |
| 12 | Eden, Tex. | EDE | 31 | 13 | 99 | 51 | 2060 | MB, HT, *RG |
| 13 | Coleman, Tex. | CMN | 31 | 50 | 99 | 26 | 1710 | MB, HT, RG |
| 14 | Brady, Tex. | BRA | 31 | 08 | 99 | 20 | 1720 | MB, *RG |
| 15 | Eldorado, Tex. | EDT | 30 | 49 | 100 | 39 | 2425 | MB, *RG |
| 16 | Ozona, Tex. | OZN | 30 | 42 | 101 | 07 | 2420 | MB |
| 18 | Mason, Tex. | MAS | 30 | 45 | 99 | 15 | 1535 | MB |
| R 1 | Breckenridge, Tex. | BRK | 32 | 46 | 98 | 53 | 1204 | MB, HT, RG |
| 2 | Cisco, Tex. | CIS | 32 | 26 | 98 | 59 | 1500 | MB, HT, RG |
| 3 | Strawn, Tex. | STR | 32 | 40 | 98 | 28 | 1050 | MB, HT, RG |
| 4 | Stephenville, Tex. | STE | 32 | 11 | 98 | 18 | 1466 | MB, HT, RG |
| 5 | Mineral Wells, Tex. | MIE | 32 | 48 | 98 | 07 | 980 | MB, HT, *RG |
| 6 | Granbury, Tex. | GRN | 32 | 27 | 97 | 48 | 718 | MB, HT, RG |
| 7 | Walnut Springs, Tex. | WAL | 32 | 03 | 97 | 42 | 900 | MB, HT, RG |
| 8 | Burleson, Tex. | BUR | 32 | 33 | 97 | 19 | 711 | MB, HT, RG |
| 9 | Itasca, Tex. | ITA | 32 | 10 | 97 | 09 | 700 | MB, HT, RG |
| 10 | Waxahachie, Tex. | WAX | 32 | 22 | 96 | 51 | 570 | MB, HT, RG |
| 11 | Corsicana, Tex. | COR | 32 | 05 | 96 | 28 | 445 | MB, HT, RG |
| 12 | Terrell, Tex. | TER | 32 | 44 | 96 | 16 | 500 | MB, HT, RG |
| 13 | Kemp, Tex. | KEM | 32 | 26 | 96 | 12 | 370 | MB, HT, RG |
| 14 | Brownwood, Tex. | BRW | 31 | 43 | 98 | 59 | 1345 | MB, HT, RG |
| 15 | San Saba, Tex. | SAS | 31 | 11 | 98 | 43 | 1200 | MB, HT, RG |
| 16 | Comanche, Tex. | CCH | 31 | 54 | 98 | 36 | 1358 | MB, HT, RG |
| 17 | Lampasas, Tex. | LAM | 31 | 03 | 98 | 11 | 1016 | MB, HT, RG |
| 18 | Hamilton, Tex. | HAM | 31 | 44 | 98 | 09 | 1243 | MB, HT, RG |
| 19 | Gatesville, Tex. | GAT | 31 | 27 | 97 | 44 | 785 | MB, RG |
| 20 | Clifton, Tex. | CLI | 31 | 46 | 97 | 35 | 671 | MB, HT, RG |

*RG belonging to Hydrologic Services

**Station also part of β network

***No observer, 1961

TABLE 2 (CONTINUED)- ALPHA NETWORK STATIONS

| No. | Station | Designator | Latitude (° ') | | Longitude (° ') | | Elevation (ft.) | Instrument MB, HT, *RG | | |
|-------|--------------------|------------|-------------------|----|--------------------|----|--------------------|---------------------------|--|--|
| R 21 | West, Tex. | WES | 31 | 48 | 97 | 05 | 630 | MB, HT, RG | | |
| 22 | Temple, Tex. | TEM | 31 | 06 | 97 | 21 | 650 | MB, HT, RG | | |
| 23 | Marlin, Tex. | MRL | 31 | 18 | 96 | 53 | 408 | MB, | | |
| 24 | Coolidge, Tex. | COO | 31 | 45 | 96 | 39 | 445 | MB, HT, RG | | |
| 25 | Fairfield, Tex. | FAI | 31 | 44 | 96 | 10 | 461 | MB, HT, RG | | |
| 26 | Jewett, Tex. | JEW | 31 | 21 | 96 | 09 | 506 | MB, *RG | | |
| 28 | Llano, Tex. | LLA | 30 | 45 | 98 | 41 | 1040 | MB | | |
| 29 | Marble Falls, Tex. | MAR | 30 | 33 | 98 | 20 | 800 | MB | | |
| ***30 | Florence, Tex. | FLR | 30 | 50 | 97 | 47 | 980 | MB | | |
| 31 | Rockdale, Tex. | ROD | 30 | 38 | 97 | 00 | 500 | MB | | |
| 32 | Hearne, Tex. | HRN | 30 | 54 | 96 | 37 | 300 | MB, HT, RG | | |
| S 1 | Athens, Tex. | ATH | 32 | 12 | 95 | 51 | 480 | MB, HT | | |
| 2 | Quitman, Tex. | QTM | 32 | 46 | 95 | 28 | 365 | MB, HT, RG | | |
| 3 | Tyler, Tex. | TYL | 32 | 21 | 95 | 16 | 535 | MB, HT, RG | | |
| 4 | Gilmer, Tex. | GLM | 32 | 44 | 94 | 57 | 365 | MB, HT, *RG | | |
| 5 | Henderson, Tex. | HEN | 32 | 09 | 94 | 47 | 500 | MB, HT | | |
| 6 | Longview, Tex. | LON | 32 | 29 | 94 | 43 | 345 | MB, HT, RG | | |
| 7 | Carthage, Tex. | CAR | 32 | 09 | 94 | 20 | 290 | MB | | |
| 8 | Marshall, Tex. | MRS | 32 | 33 | 94 | 22 | 375 | MB | | |
| 9 | Palestine, Tex. | PAL | 31 | 47 | 95 | 37 | 580 | MB, HT, *RG | | |
| 10 | Crockett, Tex. | CRO | 31 | 18 | 95 | 27 | 345 | MB | | |
| 11 | Jacksonville, Tex. | JAV | 31 | 58 | 95 | 16 | 566 | MB, HT, RG | | |
| 12 | Alto, Tex. | ALT | 31 | 36 | 95 | 09 | 433 | MB, HT | | |
| 13 | Groveton, Tex. | GRO | 31 | 04 | 95 | 07 | 323 | MB, HT | | |
| 14 | Nacogdoches, Tex. | NAC | 31 | 37 | 94 | 39 | 360 | MB, HT, *RG | | |
| 16 | Madisonville, Tex. | MAD | 30 | 57 | 95 | 54 | 230 | MB, HT, RG | | |
| 17 | Huntsville, Tex. | HNT | 30 | 44 | 95 | 34 | 400 | MB | | |

*RG belonging to Hydrologic Services

**Station also part of β network

***No observer, 1961

2. INDEX TO THE BETA NETWORK STATIONS

During the 1961 operation, there were 36 stations in the National Severe Storms Project β network. Figure 3 represents β network stations on a base map with 100-ft. height contours. It might be expected that the area of the β network is as flat as a table top; however, the 100-ft. contours indicate the hills and valleys which characterize the area. The Wichita mountains (2403 ft.) northwest of Lawton (LAW) and the Arbuckle mountains (1400 ft.) north of Ardmore (AFD) are rather pronounced high spots just outside the β network.

A large-scale map of the β network stations with 200-ft. interval contours is shown in figure 4. Six β network stations serve also as α network stations, i.e., 9(M-6), 13(M-12), 18(M-16), 22(M-14), 26(M-13), and 30(M-15).

The β network stations are listed in table 3. The height, longitude, and latitude for each station were obtained from the U. S. Geological Survey maps of scales 1:250,000 or larger.

Shown in figure 5, as typical views of β network stations, are the wind tower, instrument shelter, and weighing-bucket rain gage at Norman, and the wind tower at Rush Springs.

Since the exposure of the wind tower, 20 ft. above the ground, is important in interpreting the recorded speed and direction, the author visited each station to investigate the immediate environment and to take a panoramic picture from the top of the wind tower. Figures 6 through 18 present these panoramic photographs. Seen at the bottom of each figure is a map of the topography in the vicinity of the β network station. The maps cover a 3 x 3 mi. square with the station at the center. The contour lines at 20-ft. intervals were obtained by enlarging the largest-scale Geological Survey map available. In cases where the map was poor, the author made as accurate as possible a visual survey when he visited the stations. Contour lines presented in these figures are subject to revision when more accurate maps become available.

In making panoramic views from the tower, the camera was held so that the view would be unobstructed by wind vane or cups. Eight horizontal shots were made at 45° intervals from the top of each tower. The camera used was a 35-mm. Canon with super wide-angle lens of 25.5-mm. focal length.

Prints of each frame were joined to form a 360° view from the north at the center and the south on both sides. The original negative of each of the single shots used in making these panoramas is available upon request.

During the 1961 season the Geophysics Research Directorate operated T-11 stereoscopic cameras at Norman, Oklahoma. The distance between the camera sites, stations 4A and 4B (fig. 4), was surveyed to be 13,200 ft. The azimuth angle of 4B viewed from 4A was $29^{\circ} 24'$. The panoramic views and the exact locations of these stations appear in figure 7.

ACKNOWLEDGEMENT

The author is indebted to James R. McIntyre of the University of Chicago Mesometeorology Project for the very considerable work involved in drafting the maps, mounting the panoramic views, and computing station elevations for this report.

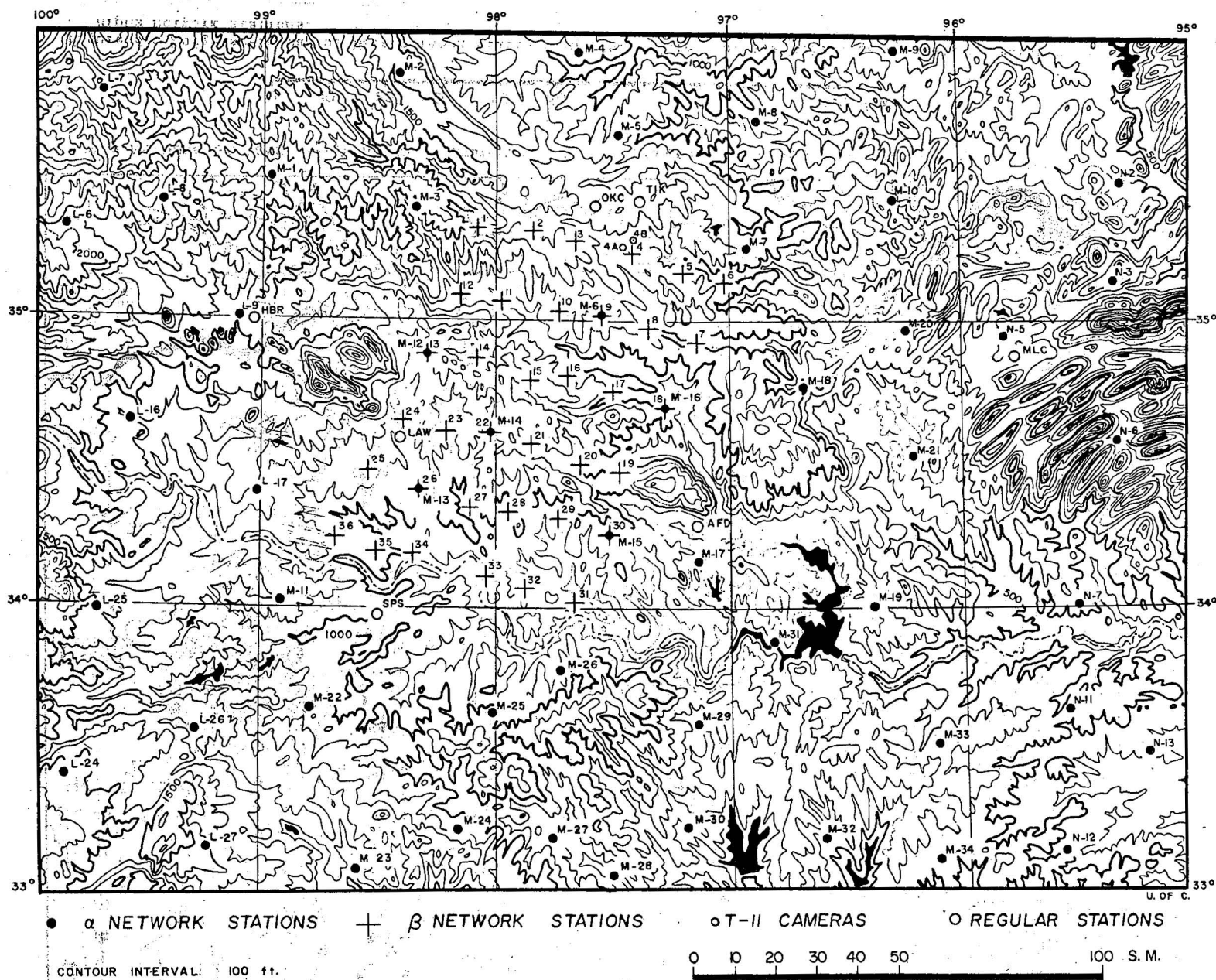


Figure 3.- Beta network stations and neighboring Alpha network stations in 1961. Contour lines are drawn for every 100 ft., and lakes are painted black.

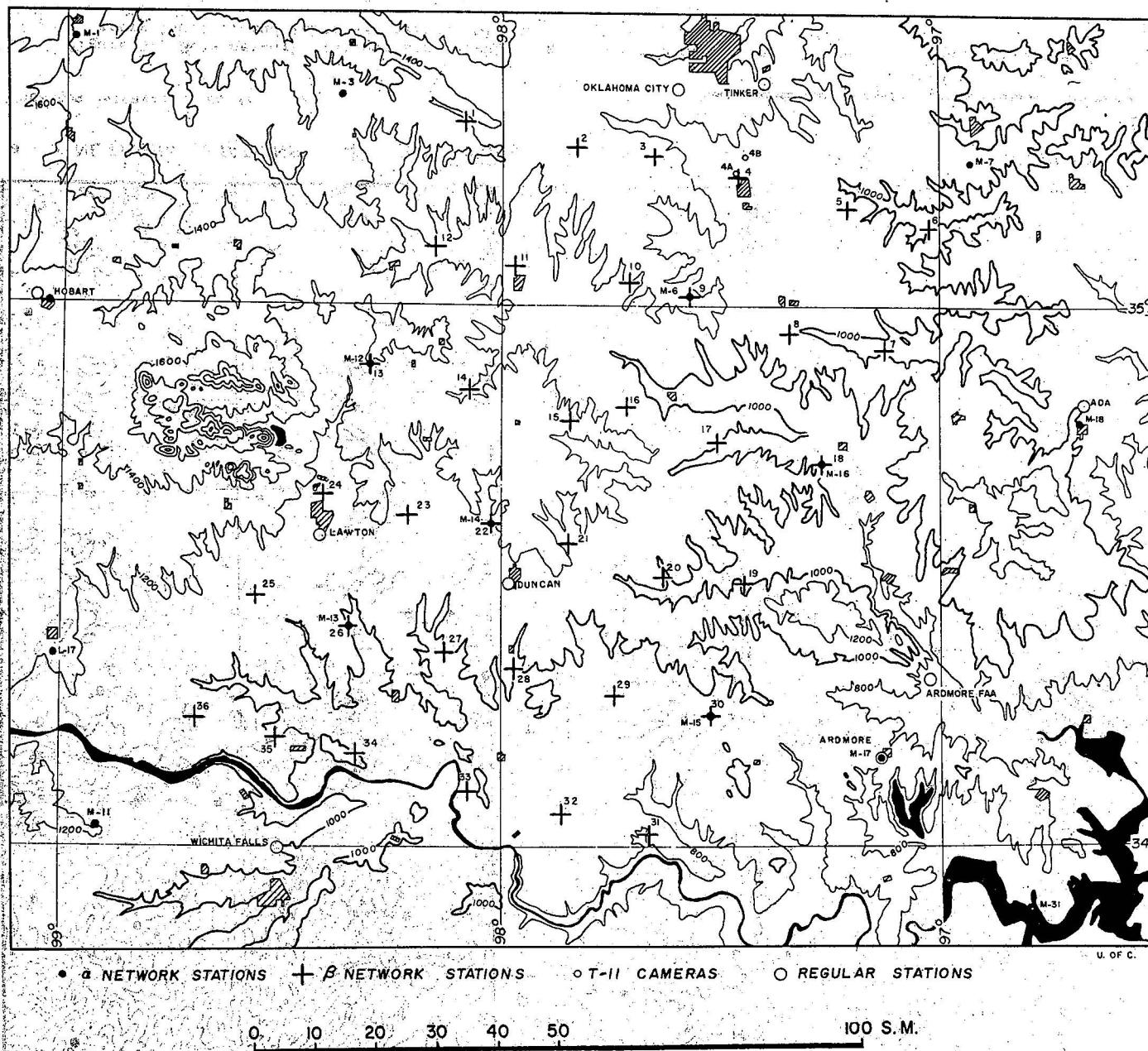
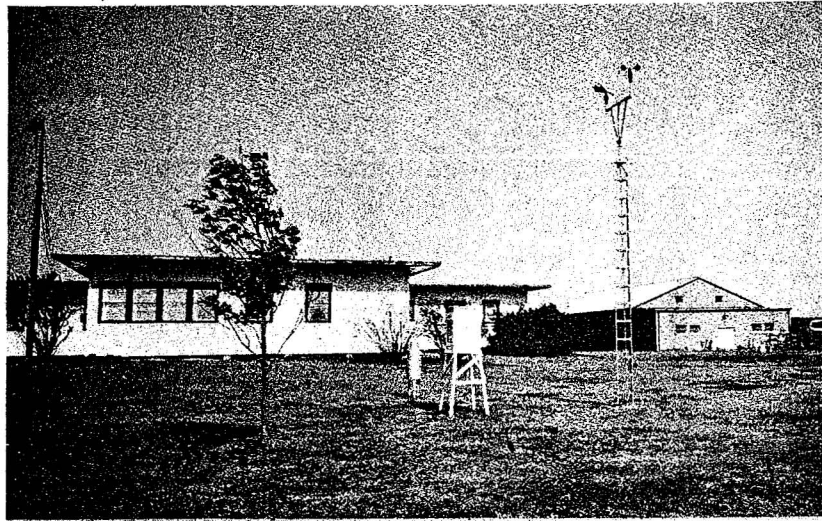


Figure 4.— Large-scale map of Beta network stations in 1961. Note that six Beta network stations serve also as Alpha network stations.

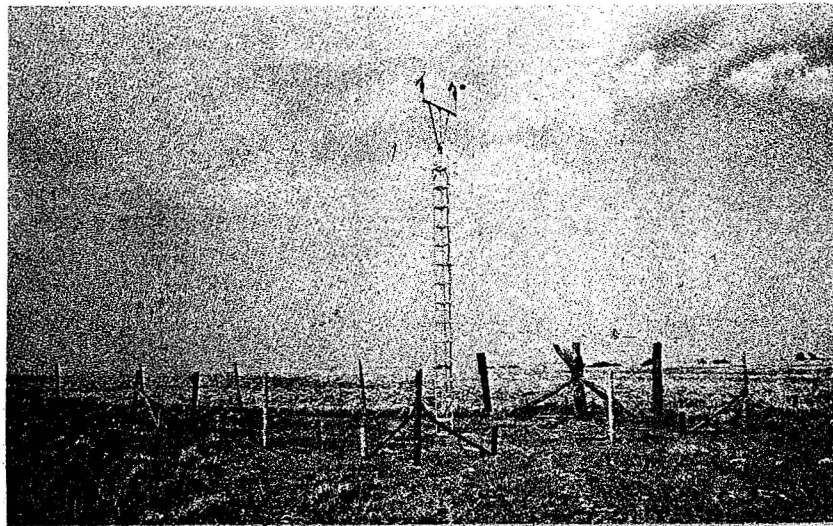
TABLE 3.- BETA NETWORK STATIONS

(All in Oklahoma)

| No. | Name | Height (ft.) | Latitude (deg. min.) | Longitude (deg. min.) |
|-----|----------------------|--------------|-------------------------|--------------------------|
| 1 | Cogar | 1420 | 35 20.2 | 98 05.1 |
| 2 | Tuttle | 1300 | 35 17.7 | 97 49.8 |
| 3 | Newcastle | 1310 | 35 16.4 | 97 39.2 |
| 4 | Norman | 1170 | 35 14.2 | 97 26.8 |
| 5 | Little Axe | 1140 | 35 10.9 | 97 12.7 |
| 6 | Macomb | 1000 | 35 08.8 | 97 01.1 |
| 7 | Rosedale | 990 | 34 55.2 | 97 07.6 |
| 8 | Wayne | 1090 | 34 57.0 | 97 20.8 |
| 9 | Criner | 1240 | 35 01.0 | 97 34.0 |
| 10 | Naples | 1160 | 35 02.5 | 97 42.5 |
| 11 | Chickasha | 1100 | 35 04.3 | 97 58.0 |
| 12 | Verden | 1160 | 35 06.3 | 98 09.0 |
| 13 | Apache | 1410 | 34 53.3 | 98 18.2 |
| 14 | Rocky Ford | 1200 | 34 50.6 | 98 04.5 |
| 15 | Rush Springs | 1280 | 34 47.1 | 97 50.7 |
| 16 | Bradley | 1150 | 34 48.9 | 97 42.7 |
| 17 | Wallville | 1020 | 34 44.8 | 97 30.4 |
| 18 | Pauls Valley | 1030 | 34 42.4 | 97 16.0 |
| 19 | Tatums | 1020 | 34 29.1 | 97 26.8 |
| 20 | Countyline | 1050 | 34 29.8 | 97 37.8 |
| 21 | Duncan Lake | 1130 | 34 33.5 | 97 50.7 |
| 22 | Marlow | 1150 | 34 35.7 | 98 01.2 |
| 23 | Letitia | 1140 | 34 36.7 | 98 12.6 |
| 24 | Fort Sill | 1180 | 34 38.8 | 98 24.3 |
| 25 | Faxon | 1100 | 34 27.6 | 98 33.4 |
| 26 | Walters Lake | 1130 | 34 24.4 | 98 20.8 |
| 27 | Corum | 1050 | 34 21.5 | 98 07.4 |
| 28 | Comanche | 980 | 34 19.8 | 97 58.0 |
| 29 | Loco | 910 | 34 16.8 | 97 44.4 |
| 30 | Wirt | 950 | 34 14.7 | 97 31.1 |
| 31 | Grady | 840 | 34 01.3 | 97 39.8 |
| 32 | Ryan | 930 | 34 03.7 | 97 51.5 |
| 33 | Sugden | 960 | 34 06.2 | 98 04.5 |
| 34 | Taylor Store | 980 | 34 10.3 | 98 19.8 |
| 35 | Randlett | 1030 | 34 12.2 | 98 30.4 |
| 36 | Grandfield | 1110 | 34 14.1 | 98 41.3 |
| 4A | Norman (T-11 Camera) | 1170 | 35 14.6 | 97 27.9 |
| 4B | Norman (T-11 Camera) | 1130 | 35 16.4 | 97 26.7 |

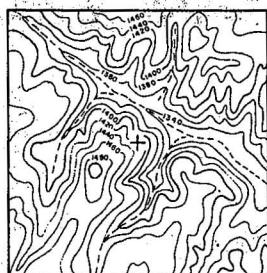
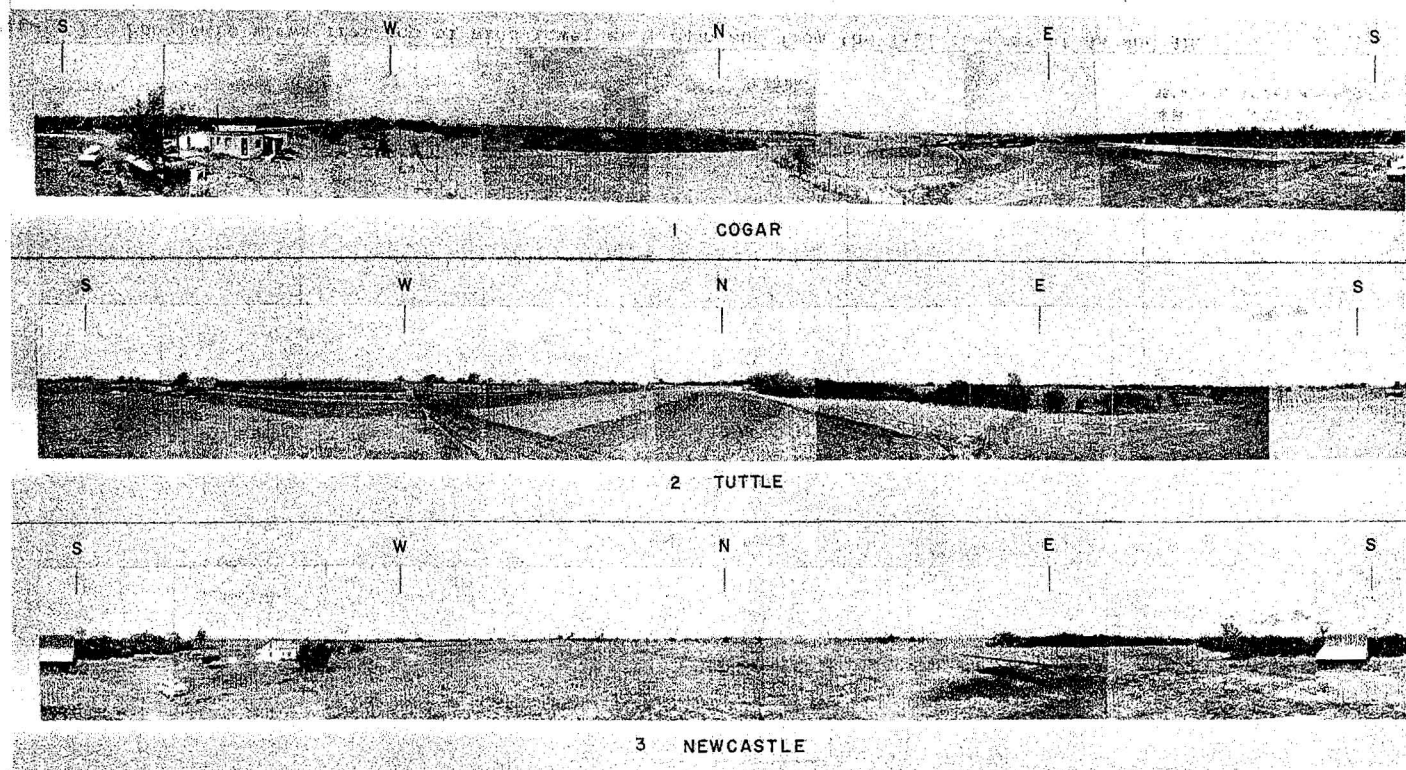


NORMAN

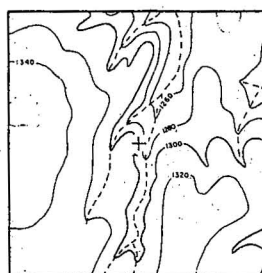


RUSH SPRINGS - WIND TOWER

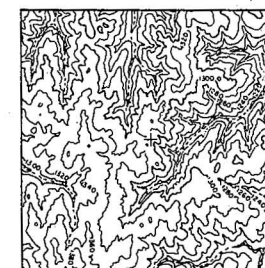
Figure 5.



1 COGAR
35°20.2' N, 98°05.1' W, 1420 FT.

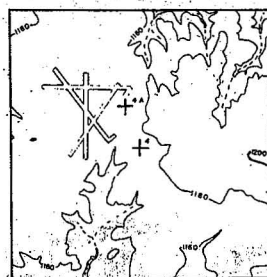
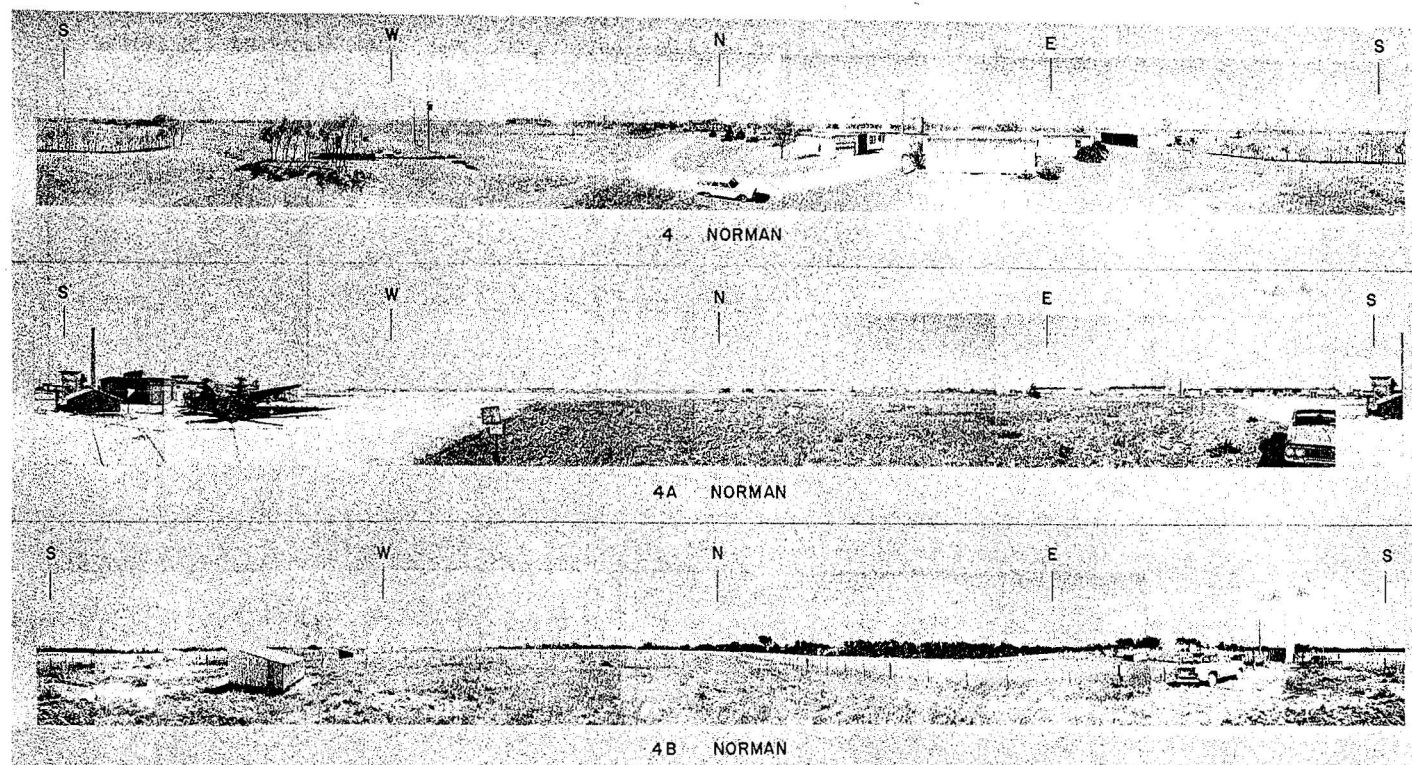


2 TUTTLE
35°17.7' N, 97°49.8' W, 1300 FT.

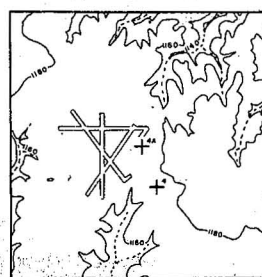


3 NEWCASTLE
35°16.4' N, 97°39.2' W, 1310 FT.

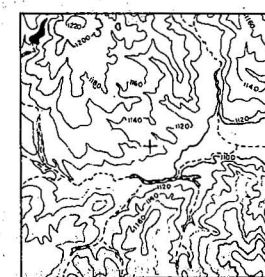
Figure 6.- Panoramic views from top of wind towers at Cogar, Tuttle, and Newcastle.



4 NORMAN
35° 14.2' N, 97° 26.8' W, 1170 FT.

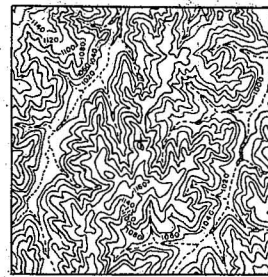
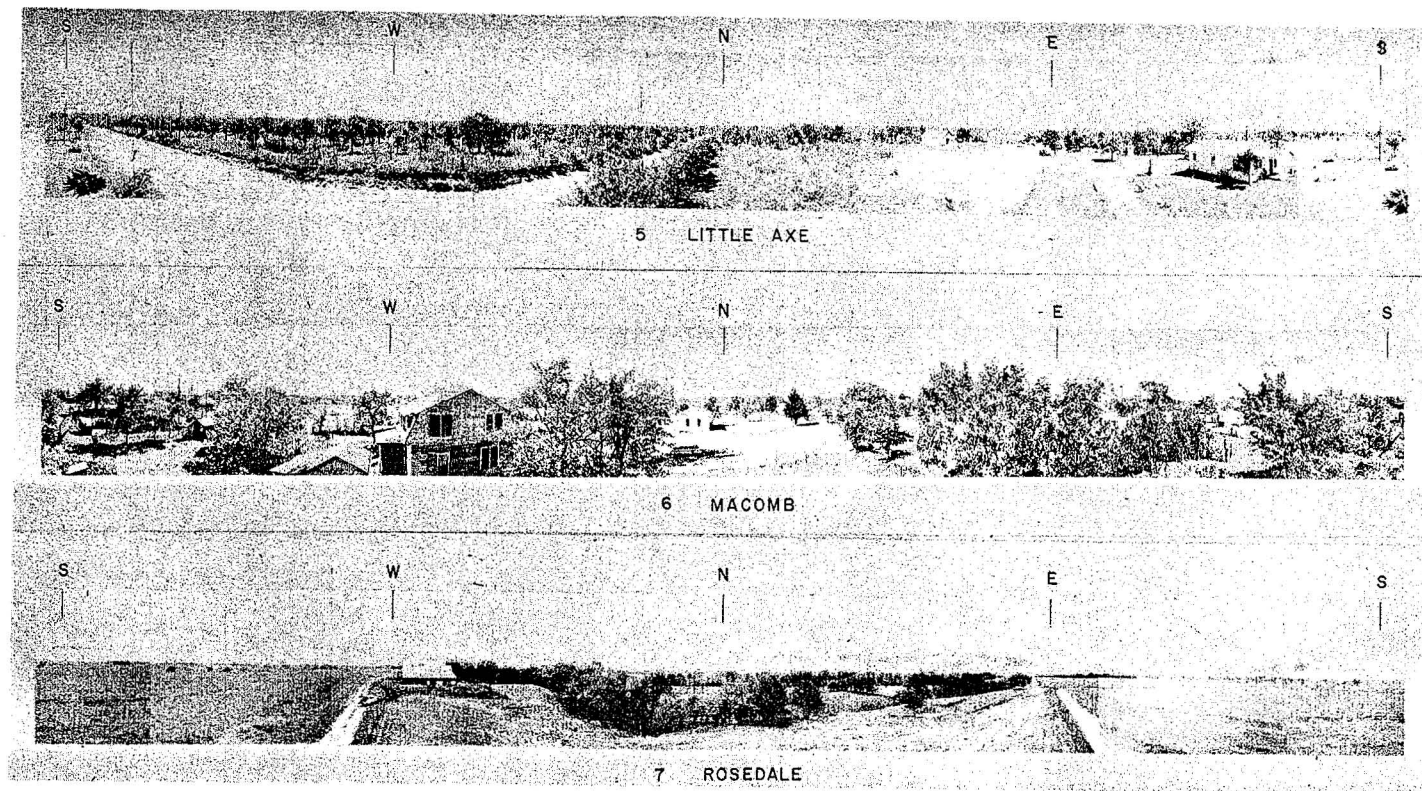


4A NORMAN
35° 14.6' N, 97° 27.9' W, 1170 FT.

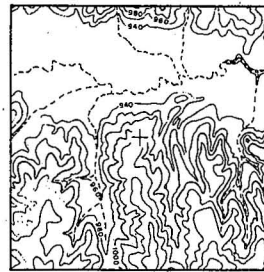


4B NORMAN
35° 16.4' N, 97° 26.7' W, 1130 FT.

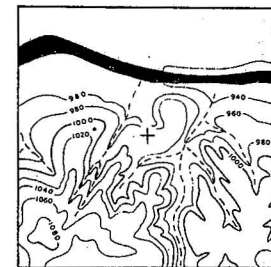
Figure 7.- Panoramic views from top of wind tower at Norman and from the T-11 cameras at 4A and 4B.



5 LITTLE AXE
35° 10.9' N, 97° 12.7' W, 1140 FT.

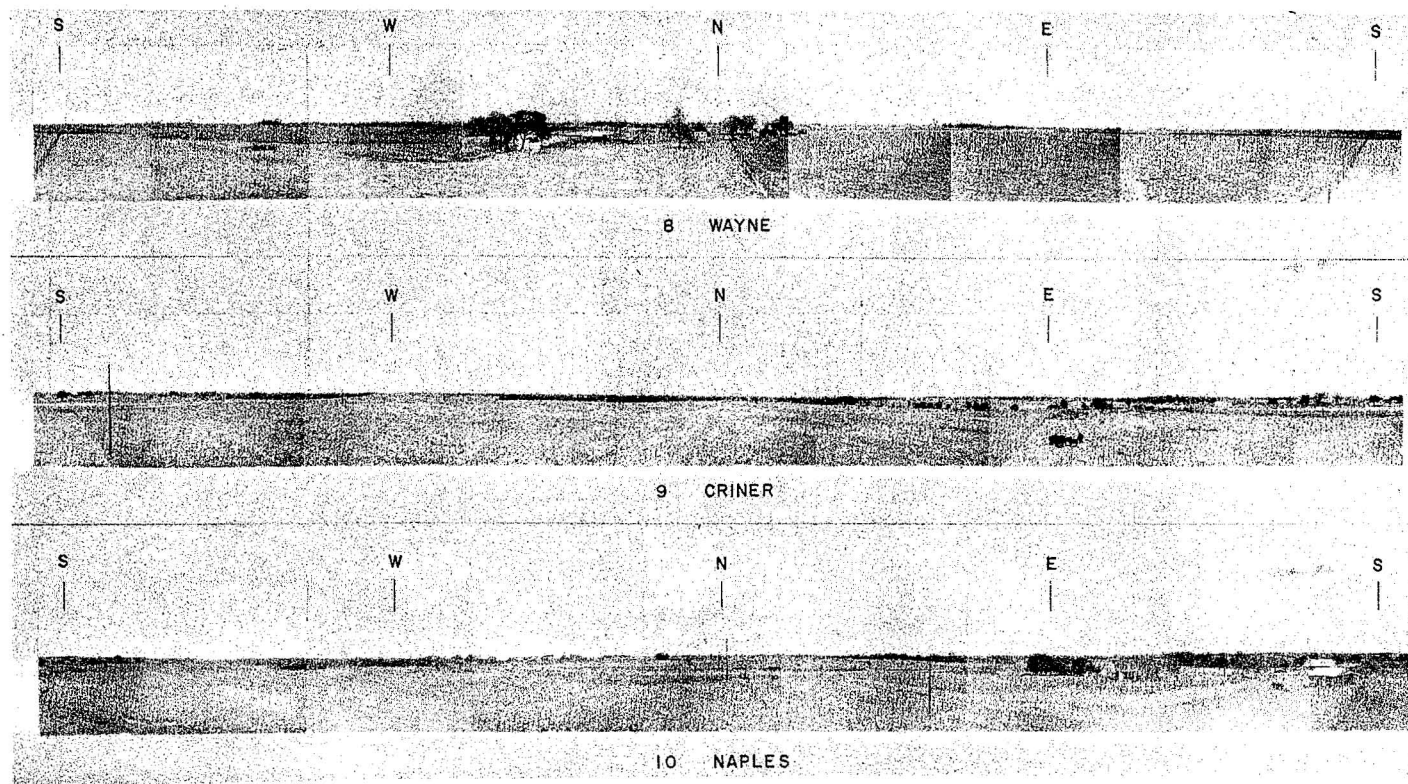


6 MACOMB
35° 08.8' N, 97° 01.1' W, 1000 FT.

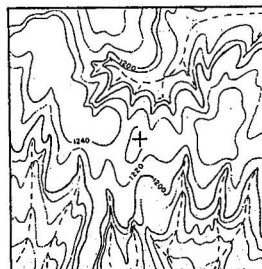


7 ROSEDALE
34° 55.2' N, 97° 07.6' W, 990 FT.

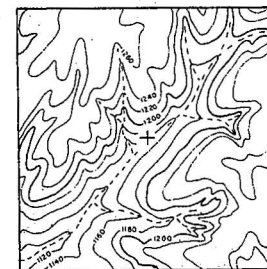
Figure 8.- Panoramic views from top of wind towers at Little Axe, Macomb, and Rosedale.



8 WAYNE
34°57.0'N, 97°20.8'W, 1090 FT.

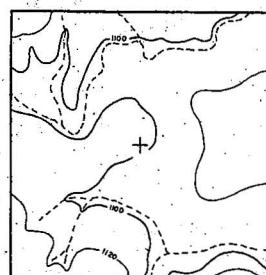
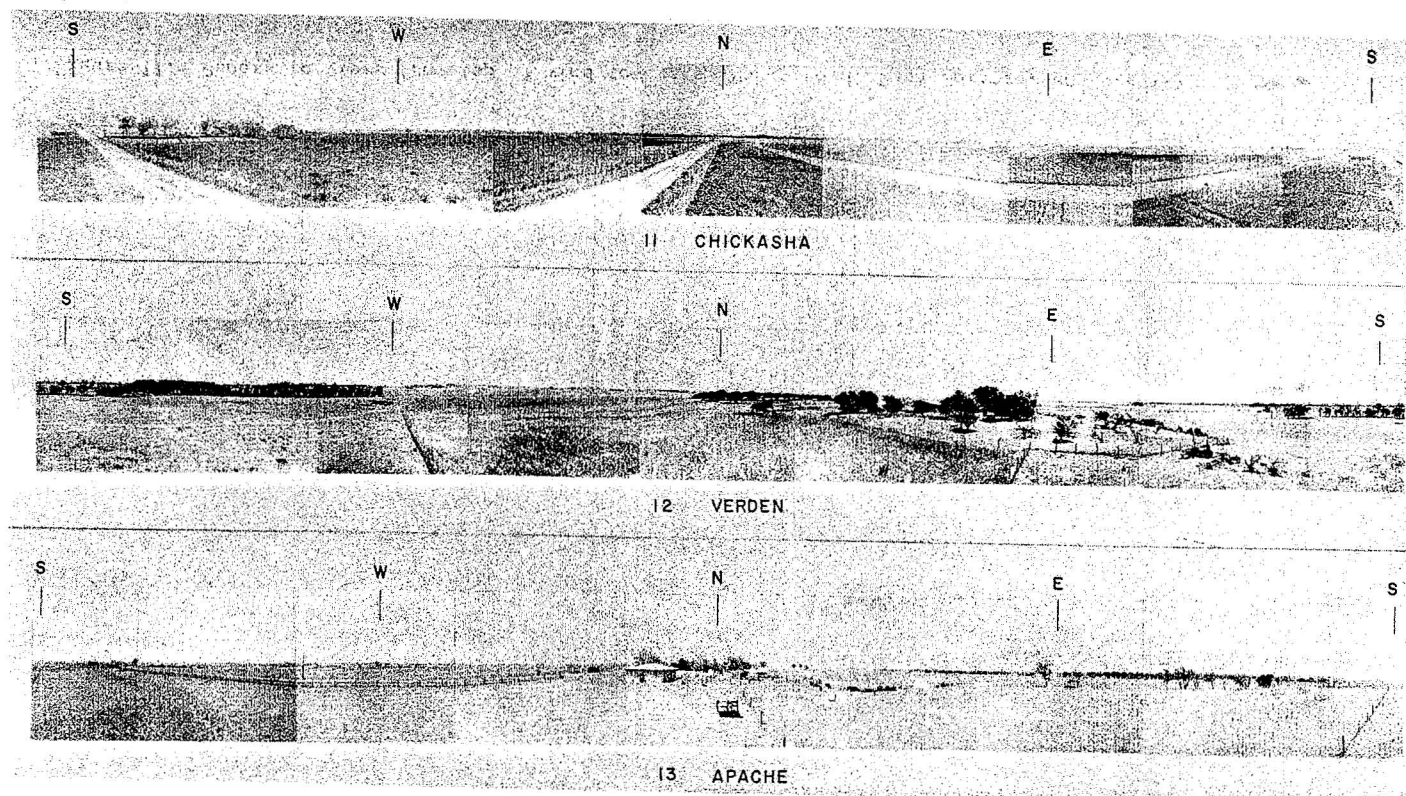


9 CRINER
35°01.0'N, 97°34.0'W, 1240 FT.

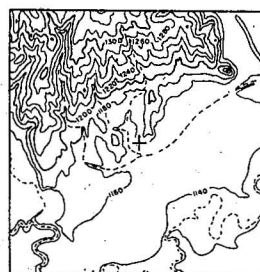


10 NAPLES
35°02.5'N, 97°42.5'W, 1160 FT.

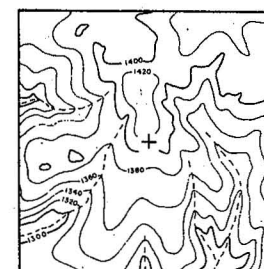
Figure 9.- Panoramic views from top of wind towers at Wayne, Criner, and Naples.



11 CHICKASHA
35° 04.3' N. 97° 58.0' W. 1100 FT.

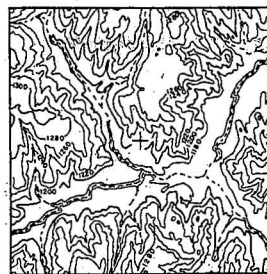
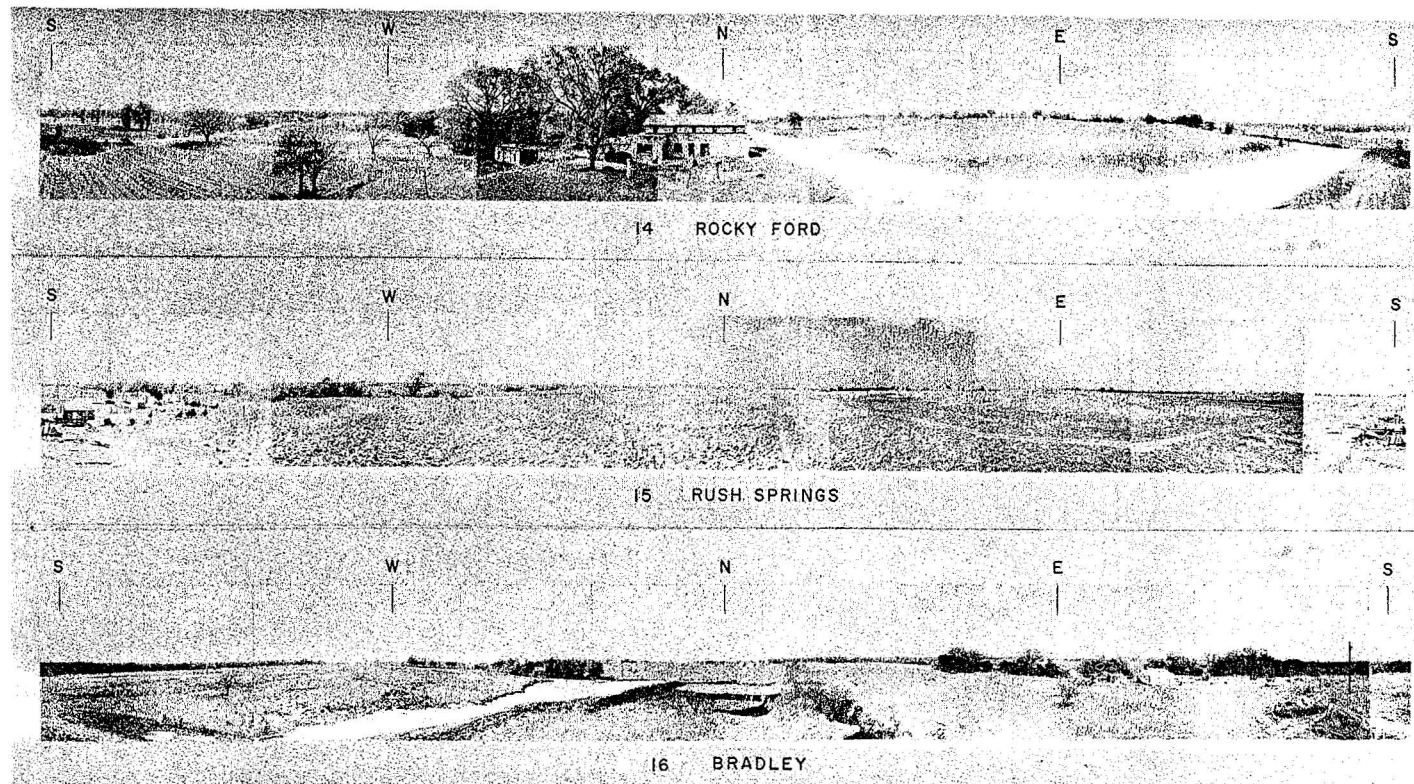


12 VERDEN
35° 06.3' N. 98° 09.0' W. 1160 FT.

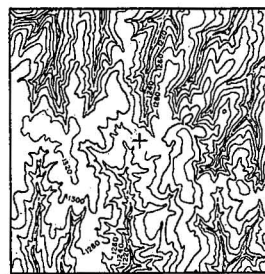


13 APACHE
34° 53.3' N. 98° 18.2' W. 1410 FT.

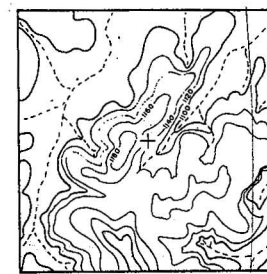
Figure 10.- Panoramic views from top of wind towers at Chickasha, Verden, and Apache.



14 ROCKY FORD
34° 50.6' N, 98° 04.5' W, 1200 FT.

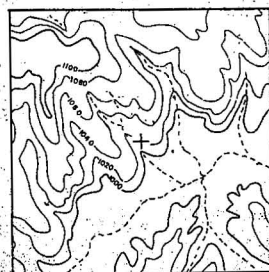
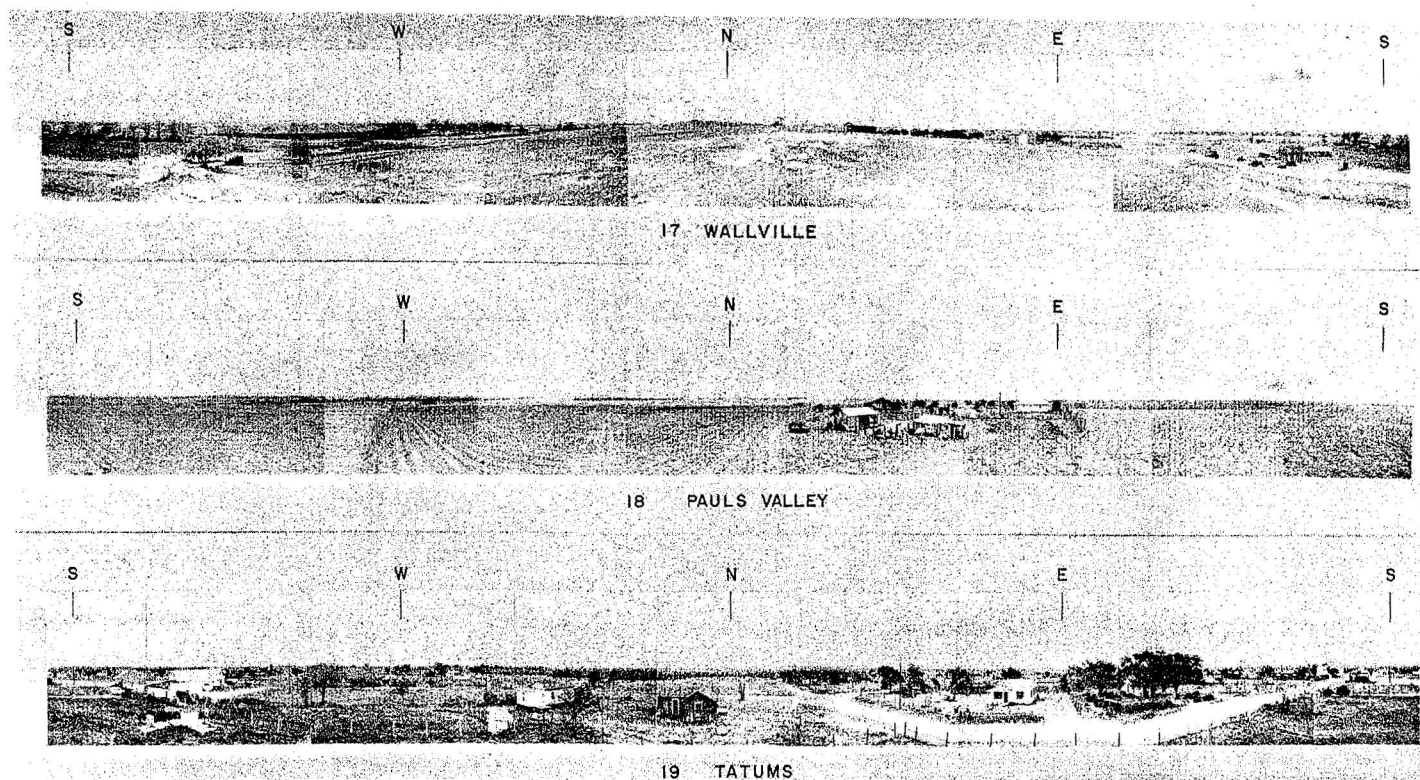


15 RUSH SPRINGS
34° 47.1' N, 97° 50.7' W, 1280

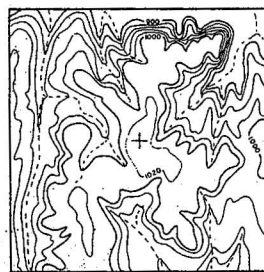


16 BRADLEY
34° 48.9' N, 97° 42.7' W, 1150 FT.

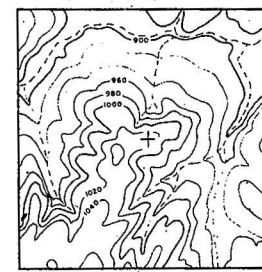
Figure 11.- Panoramic views from top of wind towers at Rocky Ford, Rush Springs, and Bradley



17 WALLVILLE
34° 44.8' N, 97° 30.4' W, 1020 FT.

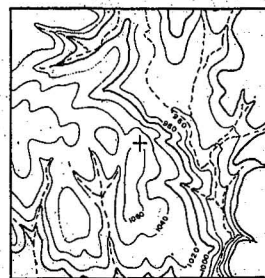
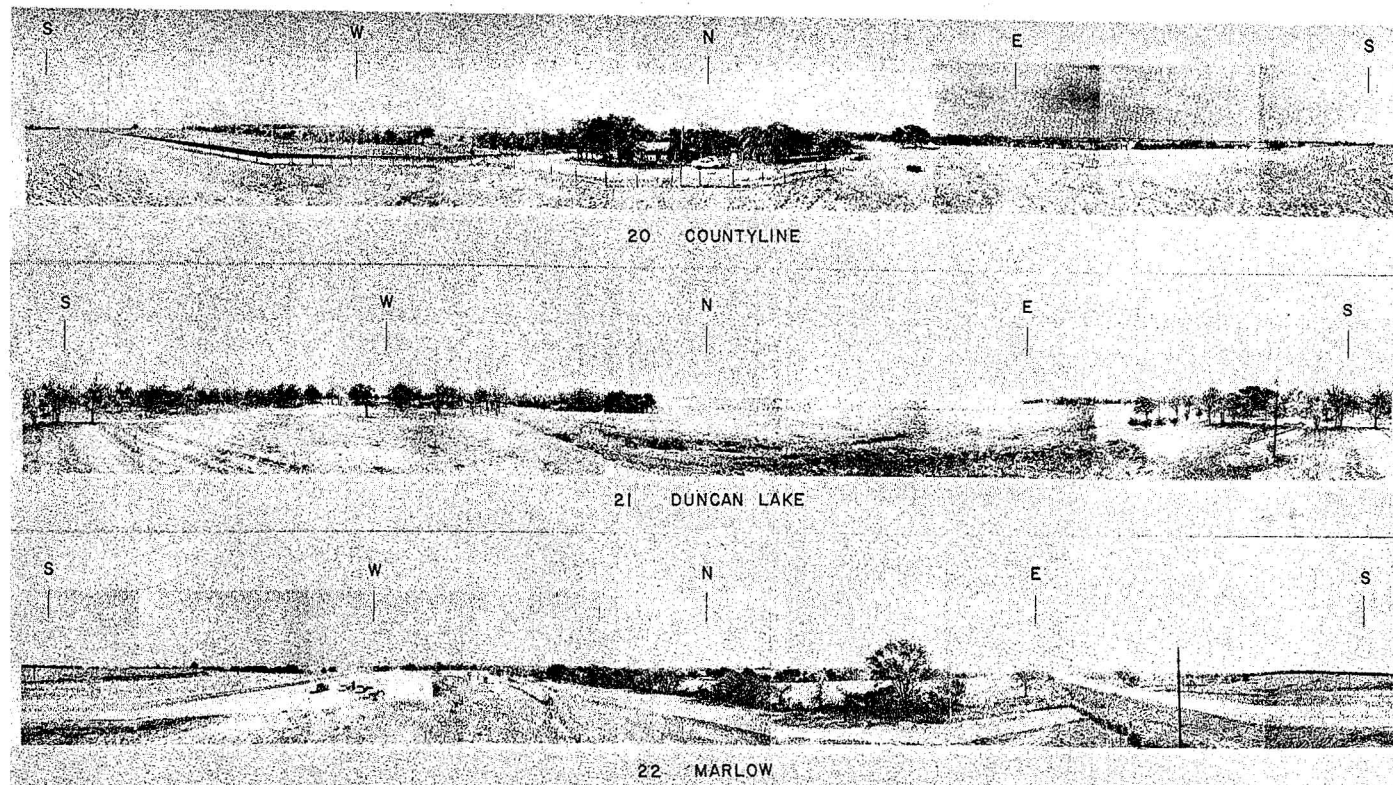


18 PAULS VALLEY
34° 42.4' N, 97° 16.0' W, 1030 FT.

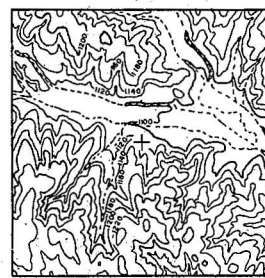


19 TATUMS
34° 29.1' N, 97° 26.8' W, 1020 FT.

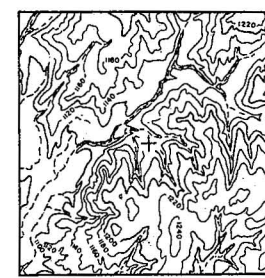
Figure 12.- Panoramic Views from top of wind towers at Wallville, Pauls Valley, and Tatums.



20 COUNTYLINE
34°29.8' N, 97°37.8' W, 1050 FT.

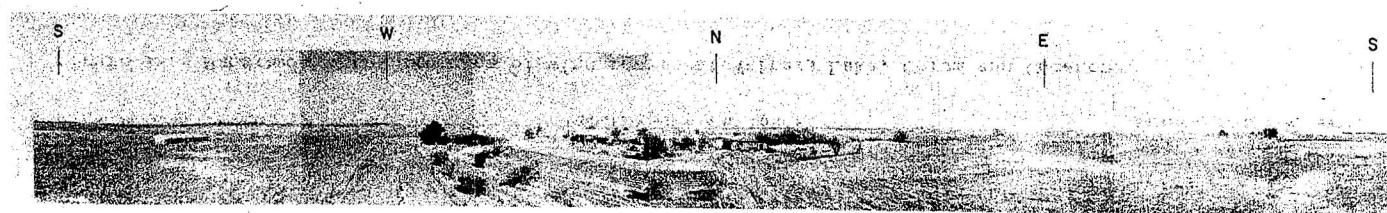


21 DUNCAN LAKE
34°33.5' N, 97°50.7' W, 1130 FT.

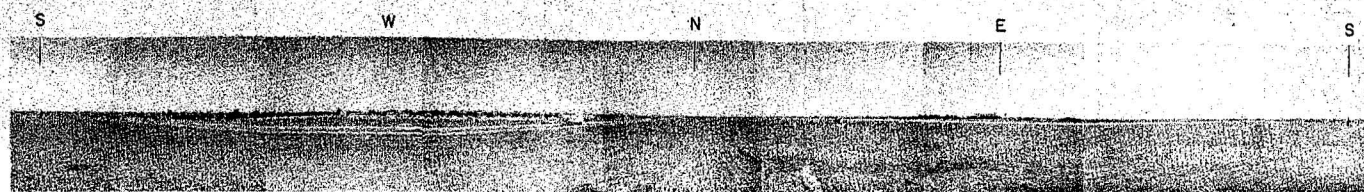


22 MARLOW
34°35.7' N, 98°01.2' W, 1150 FT.

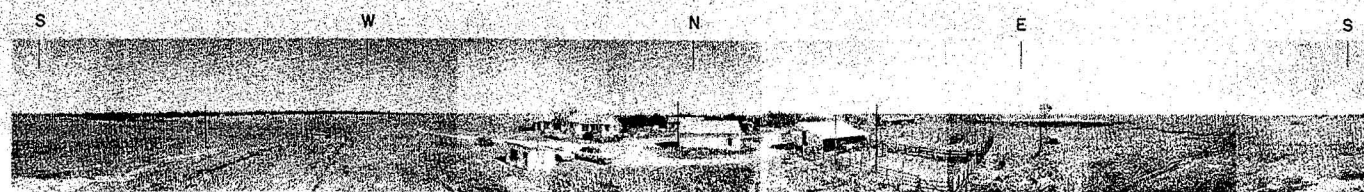
Figure 13.- Panoramic views from top of wind towers at Countyline, Duncan Lake, and Marlow.



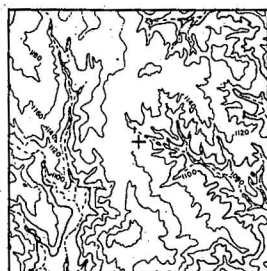
23 LETITIA



24 FORT SILL



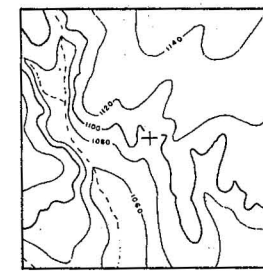
25 FAXON



23 LETITIA
34°36.7'N, 98°12.6'W, 1140 FT.

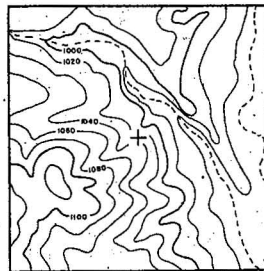
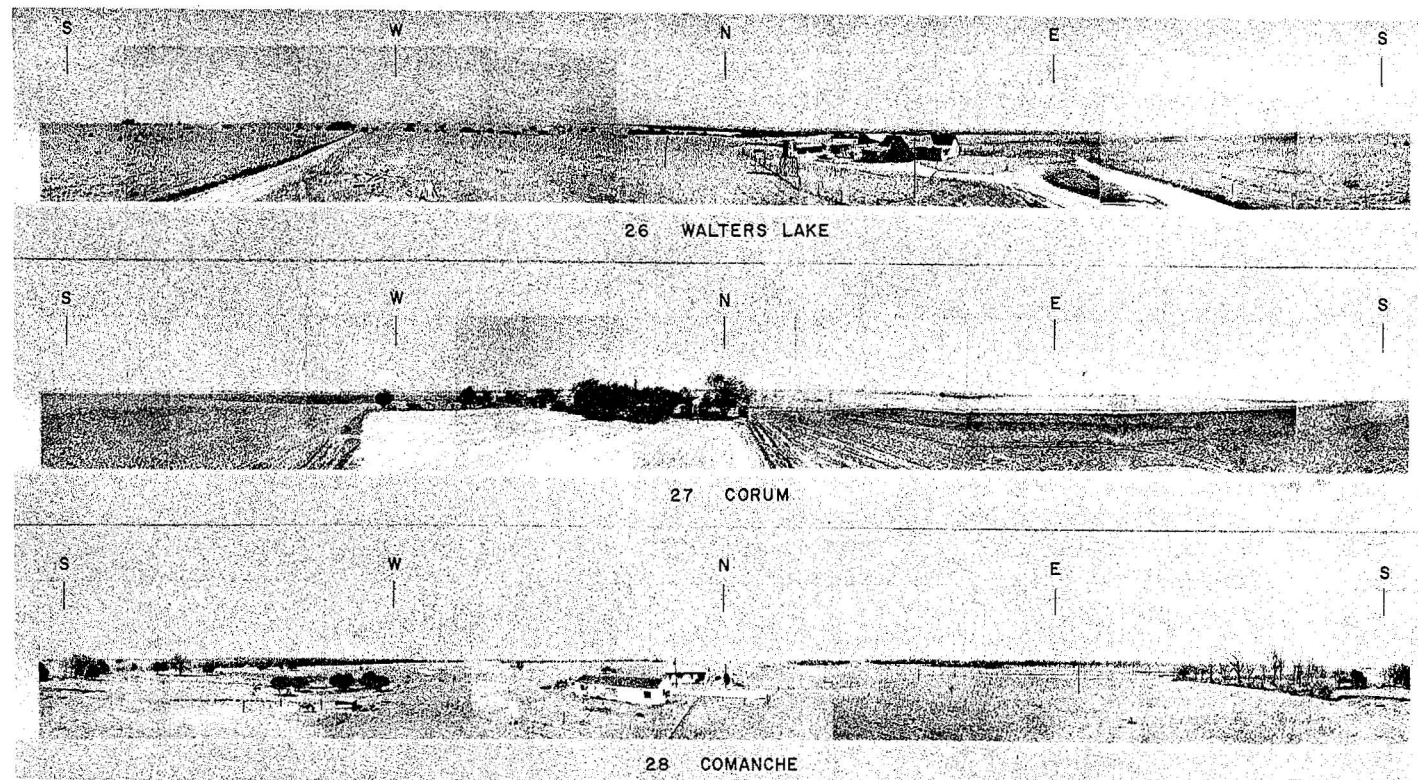


24 FORT SILL
34°38.8'N, 98°24.3'W, 1180 FT.

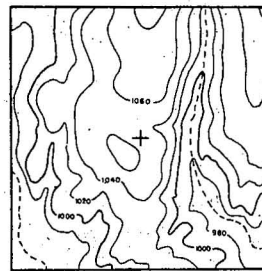


25 FAXON
34°27.6'N, 98°33.4'W, 1100 FT.

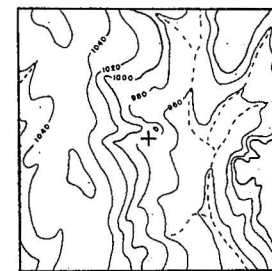
Figure 14.- Panoramic views from top of wind towers at Letitia, Fort Sill, and Faxon.



26 WALTERS LAKE
34° 24.4' N, 96° 20.8' W, 1030 FT.

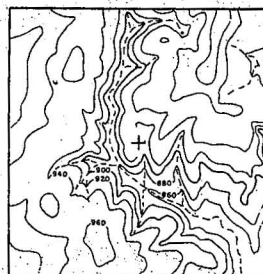
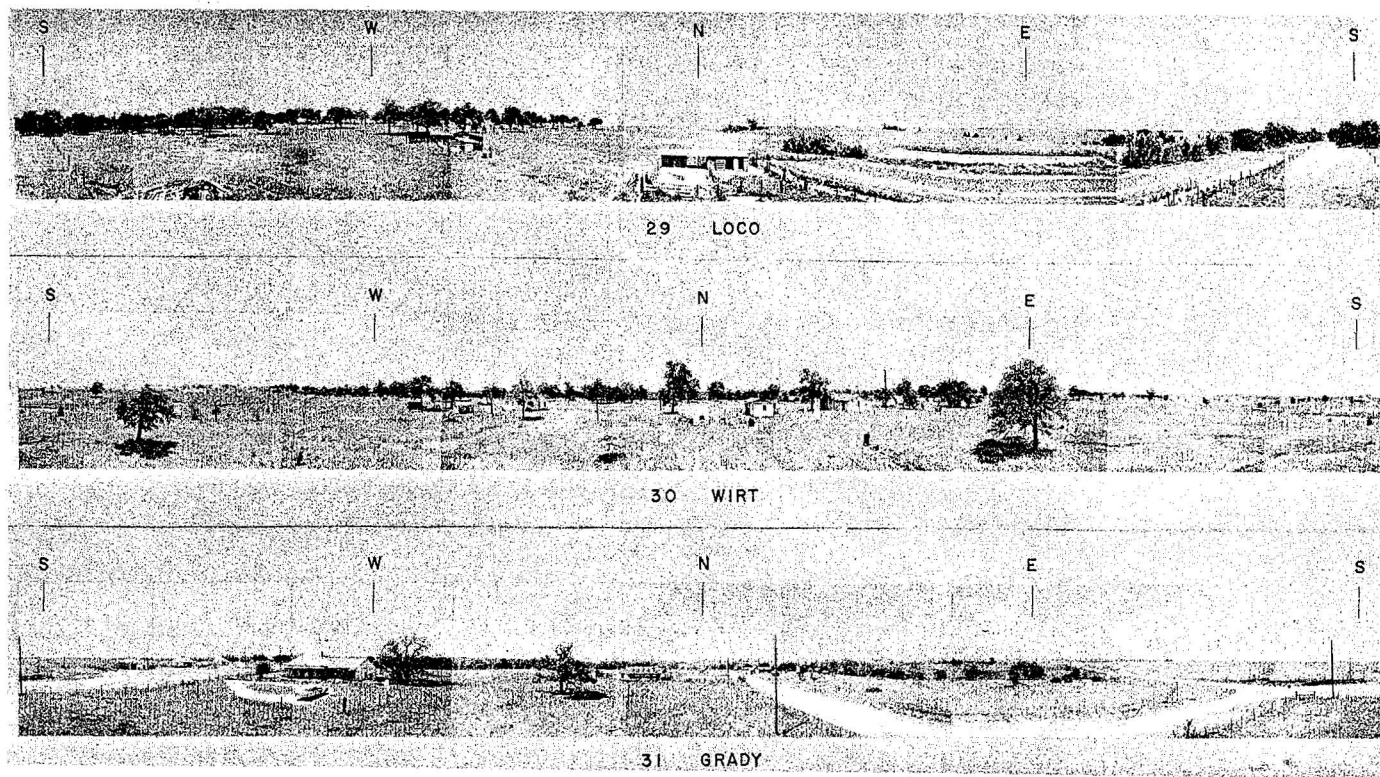


27 CORUM
34° 21.5' N, 98° 07.4' W, 1050 FT.

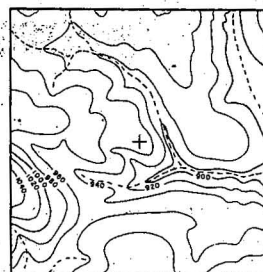


28 COMANCHE
34° 19.8' N, 97° 58.0' W, 980 FT.

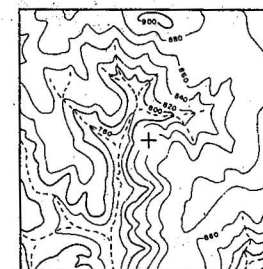
Figure 15.- Panoramic views from top of wind towers at Walters Lake, Corum and Comanche.



29 LOCO
34° 16.8' N, 97° 44.4' W, 910 FT.

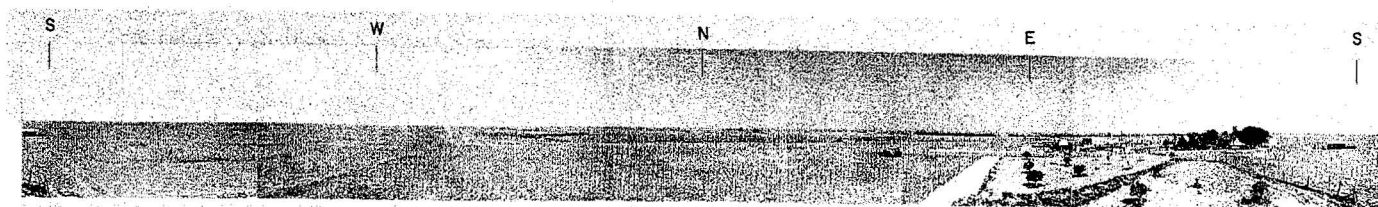


30 WIRT
34° 14.7' N, 97° 31.1' W, 950 FT.

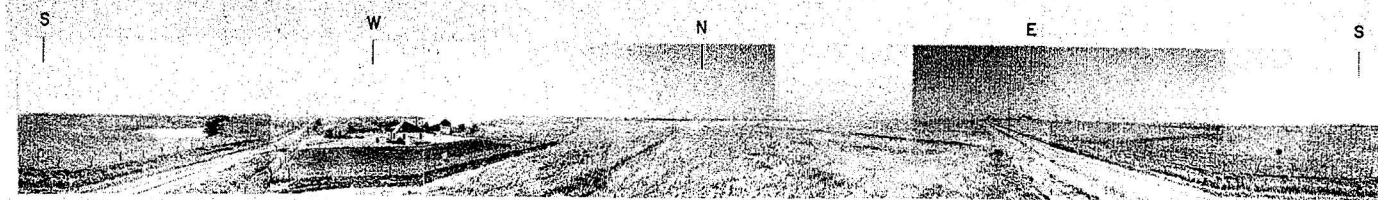


31 GRADY
34° 01.3' N, 97° 39.8' W, 840 FT.

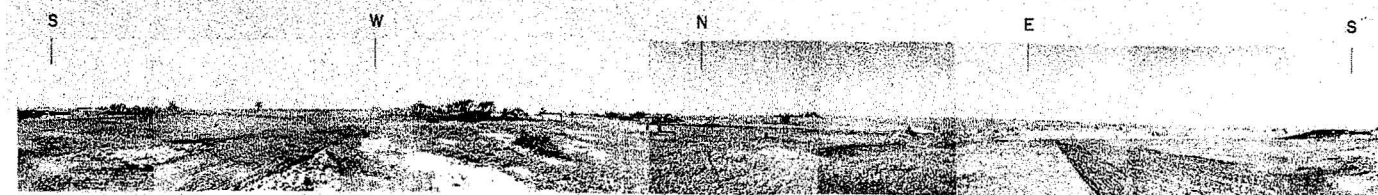
Figure 16.- Panoramic view from top of wind towers at Loco, Wirt, and Grady.



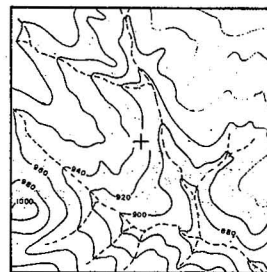
32 RYAN



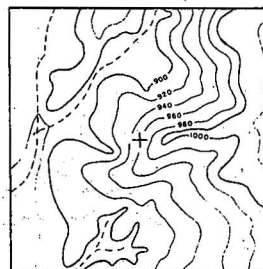
33 SUGDEN



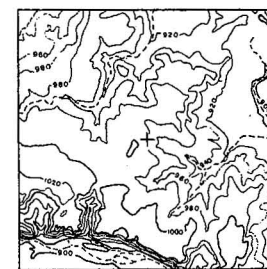
34 TAYLOR STORE



32 RYAN
34° 03.7' N. 97° 51.5' W. 930 FT.

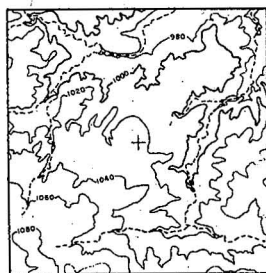
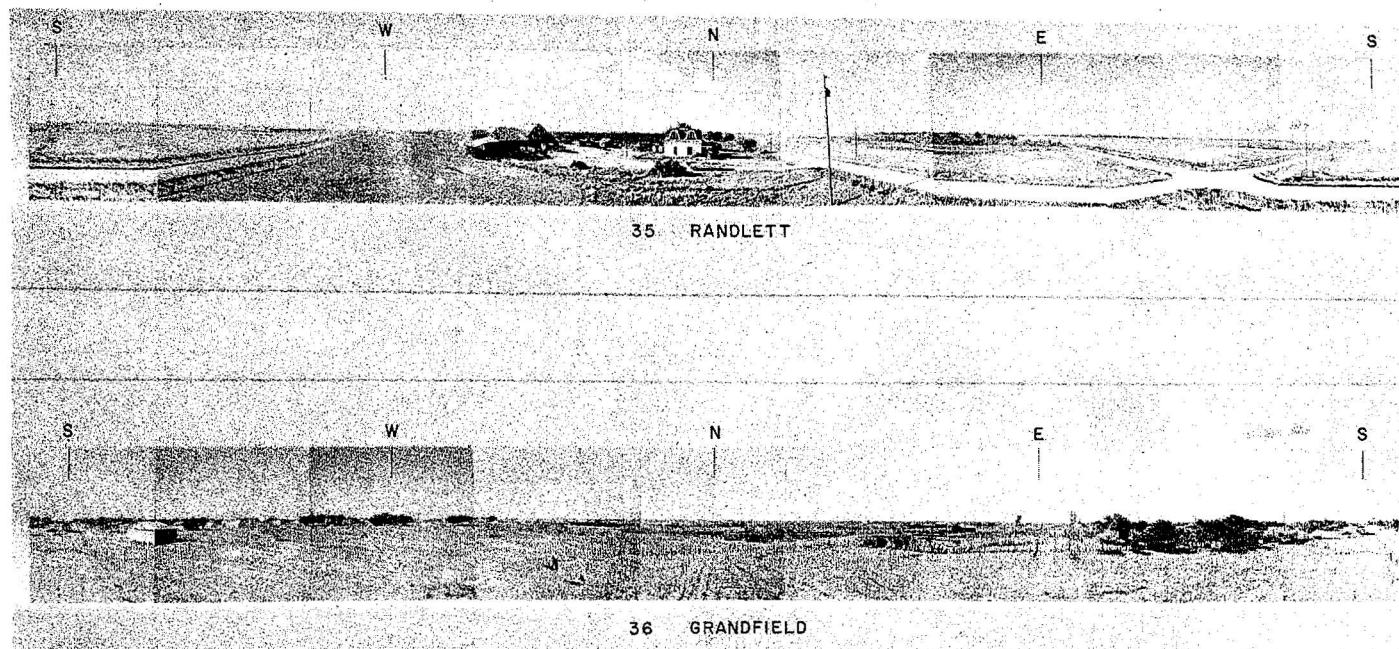


33 SUGDEN
34° 06.2' N. 98° 04.5' W. 960 FT.

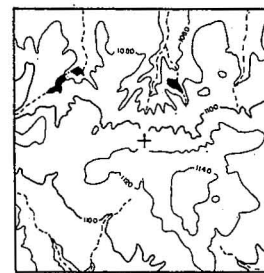


34 TAYLOR STORE
34° 10.3' N. 98° 19.8' W. 980 FT.

Figure 17.- Panoramic views from top of wind towers at Ryan, Sugden, and Taylor Store.



35 RANDLETT
34°12.2'N, 98°30.4'W, 1030 FT.



36 GRANDFIELD
34°14.1'N, 98°41.3'W, 1110 FT.

Figure 18.- Panoramic views from top of wind towers at Randlett and Grandfield.